AVIATION WEEK

SEPT. 15, 1947

INCORPORATING AVIATION AND AVIATION NEWS

A McGRAW-HILL PUBLICATION

Vol 47 No 11

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THE AVIATION WEEK

BOARD OVER BARREL—Even before the war, it has been considered that the two greatest areas for domestic expansion of air transport have been local service and cargo. Despite the tremendous difficulties encountered to date in developing those two fields, observers now feel they "Ain't Seen Nothing Yet."

CAB has the real problems, twin toughies that must be faced in the very near future. No more time to wait and see what develops. One member of the Board, Harllee Branch, has served definite notice that he will oppose certification of any more feeder lines. Another, Clarence Young, is leaning that way. Key figure, as in so many transport problems these days, is Chairman James Landis.

Tip-off to a potential reversal of board policy is the Great Lakes Area decision. No new line was certificated for Ohio, as was sought by several applicants. CAB took care of Ohio service by giving TWA additional stops in the state. Entire theory of local service airlines has been that trunk carriers were not interested in low traffic-generating stops, could not serve them as efficiently as special carriers.

STUNTED GROWTH?—Expansion of local service lines, as far as numbers is concerned, may have already been cut short. Josh Lee and Oswald Ryan probably will continue to favor new feeders in the three remaining cases. But if Young swings firmly to Branch's side, the die may have been cast.

Landis has made no secret of his belief that the number of airlines should be reduced by mergers. This has generally been in connection with trunk carriers. Should that philosophy extend down to local service lines, the days of feeder expansion are over.

CUT-RATE CARGO—A somewhat similar problem tortures the Board on cargo. If it sits tight and lets the 12 cent per-ton-mile commodity rate proposed by Capital, American and United go into effect on Oct. 5, it may mean curtains for most of the uncertificated cargo carriers.

Not only is this rate as low as that of the uncertificated carriers, but behind it is the considerably greater financial and operational resources of the certificated lines. It is taken for granted that other lines will follow Capital, AA and UAL in dropping the rates. And again Landis is in the middle. He has envisioned large-scale air-freight services, tramp steamers of the air, so to speak. This nearly implies cargo carriage by companies devoted only to that service.

Observers of the cargo field gloomily predict it will be impossible for uncertificated cargo carriers to beat the competition of certificated lines at the proposed low rates.

BUCKING THE BALANCE SHEET—At the root of both the feeder and cargo situation are the grim facts of economic life, regardless of hopes and dreams of CAB or the industry. Economics has thrown safety investigation also, for a loss—with a substantial assist from CAA's cumbersome procedures.

Not a single recommendation of the Presidents special safety board has been put into effect.

CAA was charged with drafting regulations which CAB's safety bureau would circulate and put into effect. Only one regulation has been drafted. This regulation—on temperature accountability—was to go into effect Sept. 5. It has been deferred until Oct. 15—past the time when the airlines would suffer the heaviest financial losses from reduced payloads.

Temperature accountability is only one part of the "T" (for Transport) category regulations the airlines dislike. Studying balance sheets and performance data of new aircraft they have concluded it is almost impossible to build a two-engine airplane that will meet requirements of that T category and still make money. Manufacturers back them up.

PILOTS AND PLANES—The pilots, primarily concerned with safety, are puzzled by the T category for a different reason.

The DC-3 will not meet the existing T category provisions. So it has been ruled off the airways, now in 1951, after the time had been extended twice previously. Meanwhile, the pilots wonder why it is considered safe while not meeting regulations, or whether the regulations are at fault.

Actually, many airline pilots right now prefer to fly the DC-3 to newer, four-engine planes. The reason, "We know all about that airplane."

Pilots will concede they do not yet know all the answers to four-engine operation. And in the case of the DC-6, they do not feel they are getting full opportunity to get acquainted with the most powerful commercial plane Douglas has built. Check-out time is brief—as little as 10 hours. And on a long-haul, such as coast-to-coast, there will be only one or two landings. Under those circumstances, co-pilots are getting little or no time actually at the controls.

Economics are forcing the airlines to put into service newer planes after a minimum of familiarization flying. To get payloads under the T category, the planes must depend on new devices. Pilots see margins of safety dwindling, depending almost entirely upon mechanical, not human, ability. They wonder.

NEWS DIGEST

DOMESTIC

John Dwight Sullivan, World War I pilot and New York attorney, was elected executive vice president of the National Air Council, successor to the Air Power League.

Dr. Walter Ramberg was appointed chief of the mechanics division of the National Bureau of Standards, succeeding Dr. Hugh Dryden, who resigned to head NACA research program.

Lieut. Gen. Ross E. Rowell, wartime Commandant of Marine Corps aviation, died in San Diego at the age of 62, after 40 years of service. He is generally credited with originating dive bombing in the U. S. having used the maneuver in Nicaragua against Rebel natives in 1927. He commanded the famed Marine "Hell Divers" who developed tactics using the Curtiss F8C-4 Helldiver, the first designed for the purpose U. S. dive bomber. Rowell was the first Marine aviator to attain the rank of General.

President Truman named Maj. Gen. William H. Draper to be Undersecretary of War and Maj. Gen. Alfred M. Gruenther to be director of a new joint Army-Navy-Air Force staff of 100 to be created.

FINANCIAL

Bell Aircraft Corp. reports a net loss of $210,934 for the first half of 1947 on sales of $9,141,997. Federal tax refund amounted to $525,000. Cost of sales was $9,377,936 and experiment and development costs totalled $499,995 to create the deficit.

Minneapolis Honeywell Regulator Co. paid a 50 cent dividend to holders of common stock on record Aug. 25 and 50 cent dividend to holders of convertible preferred series A on record Aug. 30.

FOREIGN

Australian Premier J. B. Chifley stated: "Apart from aircraft already on order, no further purchases of aircraft involving dollar expenditure will be authorized. The expenditure of dollars on spare parts for aircraft will also be closely supervised."

Swissair plans to inaugurate passenger and cargo service between New York and Geneva, Switzerland this week with Douglas DC-4 transports.

Pan American Airways is slated to resume flights between San Francisco and Hong Kong on Sept. 24 with three trips weekly.

England Claims highest speed seat ejection with 500 mph. plus performance from two-seat converted Gloster Meteor. The release was at 12,000 ft. from a patented Martin-Baker ejector seat.

Dr. Keith N. E. Bradfield, chief airport engineer of Australian department of civil aviation, was appointed to two-year term as Australian representative to ICAO in Montreal.

VOL. 47 • NO. 11

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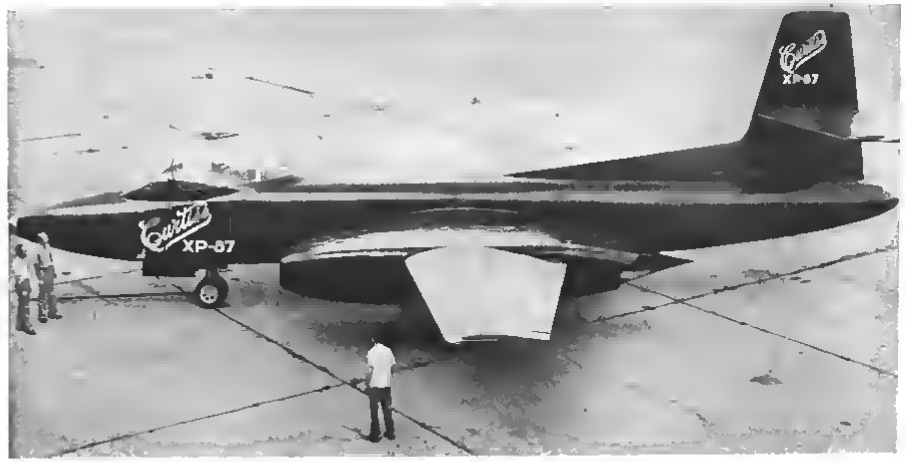


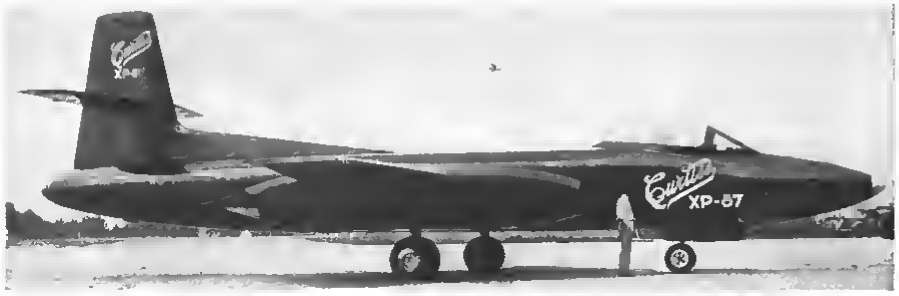
AAF Unveils New XP-87 Fighter

Army Air Forces today revealed the Curtiss Wright XP-87 (AVIATION WEEK Sept 1) as the first in a series of new all-weather fighters. The 620 mph four jet plane carries a crew of two and is designed to carry out combat interceptor or escort missions regardless of weather. Through a combination of special engineering features and radar navigational and fire control equipment, the 15 ton fighter may introduce new tactical planning factors into both offensive and defensive air combat.

With a 65 ft span and a length of 60 ft., the XP-87 is powered by four Westinghouse 24C axial flow turbojet engines developing a total of 12,000 lb static thrust. Decision to use these Navy developed engines was made on the basis of their small (24 in.) diameter, enabling two of them to be installed in a thin, airfoil shaped nacelle on either side of the fuselage. This installation provides lift over the nacelle region without the heavy drag penalties of conventional nacelle designs.

▶ **40,000 Ft. Ceiling**—Capable of a 620 mph. top speed, the XP-87 is rated at 585 mph. at 20,000 ft. and a rate-of-climb of more than 6,000 ft. per minute carries it up to its 40,000 ft. ceiling.

Armament is concentrated in the nose



with six fixed .50-caliber machine guns and a four-gun 50 caliber radar-controlled movable turret. The turret is controlled remotely by the radar operator but may be fired in salvo with the fixed guns by the pilot. Maneuverability has been minimized by a design factor in the XP-87 with the heavy nose concentration of fire power designed for fast passes at enemy targets.

► **Two Man Crew**—Two-man crew is mounted in a streamlined "bubble" cabin, which is pressurized for high altitude operation. The co-pilot/radar operator is located directly behind the pilot. Both crew members are mounted on ejection seats for high speed escape in emergency.

The new "all weather" category was established by the AAF for future design purposes during the closing months of World War II on the basis of operational experience with the Northrop P-61 Black Widow and Douglas P-70 Midnight Mauler night fighters.

These multi place aircraft, as well as converted Bristol Beaufighter and DeHavilland Mosquitos used by the AAF during the war proved the potentialities of radar guided combat during periods of restricted visibility. Weather grounded fighters on countless occasions throughout the war, particularly during the battle of the Ardennes Bulge pointed sharply towards "weather proof" fighters as a tactical "must" for future design planning.

► **Design Requirements**—"All weather" design requires smooth cooperation between the airplane and its equipment and problems of airplane ice, gust and air intake water resistance must be closely integrated with radar navigational, gun laying and tracking equipment. Solutions to these problems in the Curtiss XP-87 will create an entirely new combat type capable of fast interception duties at night or under "zero-zero" daytime conditions. The 2,000-mile range of the new fighter could also produce an escort for strategic bombers in fulfillment of General George C. Kenney's "Aerial Coast Guard" proposal (AVIATION WEEK, Aug. 18).

Special "all-weather" features of the new category include "hot wing" deicing equipment along the wing, fin and stabilizer leading edges. This heated air from the turbo-jet engines is also used to clear the cabin windshield, heat and cabin and gun turret lubrication system. Special protected air intake ducts to the jet engines prevent icing or water ingestion during ram storms.

► **Radar Equipment**—Radar equipment includes conventional search radar with long and short range oscilloscopes, long range navigational equipment, radar identification unit and radar gun tracking and laying equipment including automatic fire control. The laminar flow wing is a tapered, cantilever design with four small flap panels on either side of the nacelles. Slots are mounted in each wing leading edge near the tip to provide stable airflow over the aileron region at high angles of attack.

Jet nacelles are approximately 10 ft. long and are fitted with tailpipe variable thrust "plugs", which are controllable while in flight from the cockpit to vary the thrust of the engine without adversely affecting engine speed or efficiency.

Following completion of engine runup and ground tests at the Curtiss-Wright Columbus (Ohio) plant, the XP-87 will be sent to Muroc Army Air Base, Calif. for flight tests. It is scheduled to be joined there late this fall by the Northrop XP-89, second in the new series. Quantity procurement for "all weather" fighters appears assured by the additional funds provided for the purpose in the AAF's fiscal 1948 appropriation.

LANDIS AND PILOTS INSPECT MARTIN 202

CAB Chairman James M. Landis and representatives of the Air Line Pilots Association visited the Glenn L. Martin Co. plant at Middle River, Md. for flight and ground demonstrations of the automatic propeller feathering device used on the Model 202 transport after this mechanism came up for discussion in the President's special Air Safety Board. At the left O. E. Pat Tibbs, Martin chief test pilot, explains cockpit installations to Landis. At the right Tibbs explains external features to a group including H. B. Cox, American Airlines and ALPA representative on the President's Board; J. E. Wood, Eastern Airlines and senior ALPA vice president; Larry Cates, ALPA Washington representative, Robert Hotz, Aviation Week News Editor, and Don Covington, Martin flight test engineer chief.

Safety Board, Airlines Wrestle 'Unseen Passenger' Problem

Presidential group and ICAO delegation disagree on temperature accountability as CAB postpones emergency regulation at airlines request.

By ROBERT HOTZ

The complex issue of "unseen passengers" added to gross take-off weights of airline transports by increases in air temperatures boiled to the surface of the safety situation last week. A marked difference of opinion was revealed between the President's Special Air Safety Board and the United States delegation to the ICAO Conference on Temperature Accountability in Paris Sept. 23.

The President's Board has spent most of the summer in attempting to get an emergency temperature accountability regulation into effect while the transport industry was polled for comment on a permanent regulation. Emergency regulation was finally issued by CAB to become effective Sept. 6. It imposed weight penalties up to 300 lb. per degree of temperature increase above 59 degrees Fahrenheit. CAB noted that "A delay in the promulgation of this special regulation would not be in the public interest." Last week CAB postponed the regulations effective date to Oct. 15 after Air Transport Association protested that airlines would be unable to have new take-off weight calculations ready to meet the Sept. 6 deadline.

► **ICAO Delegation**—Meanwhile the U. S. delegation to the ICAO Paris Conference on Temperature Accountability adopted a position that differs materially from the President's Air Safety Board recommendations. The ICAO delegation will plump for full temperature accountability based on the monthly average temperature at each specific airport with a spread of plus or minus 20 degrees Fahrenheit.

The Air Line Pilots Association, which has been spearheading adoption of the emergency temperature regulation through its representation on the President's Board assailed the ICAO delegation's decision on the grounds that no airline pilots were included in the delegation or in meetings which led to the delegation's decision. They pointed out that the delegation included two representatives of the Air Transport Association and Aircraft Industries Association, whose expenses to Paris are being paid by the State Department. ATA representatives, Phillip Coleman of Lockheed and W. B. Oswald of Douglas, opposed temperature accountability at the Presidential Board public hearings on the subject. ALPA indicated it would take its plea for representation on the ICAO delegation to CAB and Presidential Board Chairman James M. Landis.

► **Sharp Disagreement**—ATA and ALPA were also in sharp disagreement on the result of the emergency temperature regulation on foreign operations of U. S. carriers. ATA claimed that operations of Pan American, Chicago & Southern and National Airlines would be hampered at Havana because of 4,000 ft. runways at the field now used. ALPA pointed out that a surplus military airport with three 7,000 ft. runways was located a short distance from Havana and suggested a shift to the larger field.

ATA board of directors devoted the majority of its last meeting to economic effects of temperature accountability and estimated that revenue losses due to decreased payloads are apt to be severe particularly during the peak traffic of the summer season.

Meanwhile the President's special Air Safety Board turned its attention to how the two latest airline transports, the Martin 202 and the Convair Liner meet safety requirements of the transport category. Pilots representatives were particularly concerned about the use of the automatic propeller feathering devices on both planes to increase gross take off weights, and heavy loading doors in the forward part of the cabin.

With CAB Chairman Landis, ALPA representatives participated in flight and ground demonstrations of the Martin automatic propeller feathering device. Main purpose of the device is to reduce time a propeller windmills during the feathering process thus reducing drag and allowing better climb characteristics.

Without automatic feathering the Martin 202 is certificated for a 34,500 lb. gross weight. With the device CAA allows a 38,000 lb. gross. Convair Liner which faces the same problem is still undergoing certification tests. Pilots indicated they are not happy about taking on an additional 3,500 lb. take-off weight on the sole strength of the feathering device.

Miami Air Races Scheduled For January

First steps toward a permanent organization of the Miami All American Air Maneuvers are being taken this year in the form of foundation memberships being offered to business and professional firms and individuals at $150 each. These funds will be augmented by appropriations of political subdivisions of the great Miami area. Previously, financing of the maneuvers has been by allotments of publicity funds from city and county treasurers in the area.

An added feature of the 16th annual maneuvers to be held Jan. 9, 10 and 11, 1948, is a trophy race for plane with 190 cu. in. displacement engines under the rules of the Professional Race Pilots Association, which governed the highly successful Goodyear Trophy Race at the National Air Races this year. Other events will be P-51, P-38 and P-63 daily races seven laps over a 15-mile course and a free-for-all race 12 laps over the same course. In addition, Army and Navy, aerobatics and special acts will be displayed.

New 'Copter Uses Tested in California

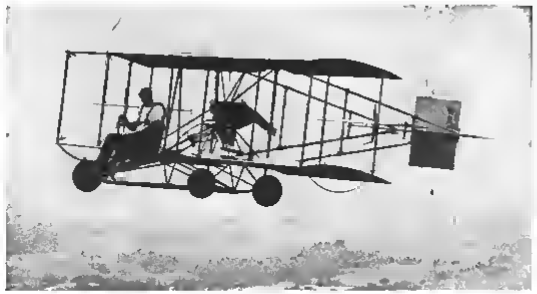
Helicopter utility has blossomed on two new fronts in Southern California due to the imaginative planning of Knute Flint, president of Armstrong-Flint Helicopter Co.

His experimental shooting of motion picture "chase" sequences, pursuing fleeing bandits on foot and in cars with a camera mounted in a Bell Helicopter, brought an R K O Studios contract. Costly longdolly and camera boom setups were abandoned and the helicopter camera used in filming "Your Red Wagon". Twelve of a series of sequences quickly shot in ten hours of flying will be used in the finished film. Studio producers estimated they had saved $10,000 in production time and equipment setups.

More dramatic are results of helicopter flying in the recent forest fire that swept a rugged mountain section near Los Angeles. Two Armstrong-Flint helicopters flew a total of 64 hr. in five days, rescued a total of 20 trapped fire fighters, transported 250 to fire fronts having no road access, and delivered an average of one ton of supplies a day to fire fighters. Food, water, tools and bedding. Landings were made at altitudes as high as 6500 ft.

A DC-3 contractor at one time parachuted 1154 lbs. of supplies to fire fighters with varying accuracy, at a cost of $145. Flint estimated his cost to the forest service for delivery of a similar volume to have been $70, with the supplies spot-landed where needed and with no loss of time for special packaging required for parachuting supplies to the ground.

Flint's company now is experimenting with helicopter walnut harvesting, using rotor blast to strip nuts from trees. Conventional harvest technique is for workers to shake the trees, by hand and mechanically, which frequently damages the trees.



BUILDS 1916 VINTAGE PUSHER

When nostalgia for the "good old days" got the best of Airline Pilot Walter Bullock of Lakeville, Minn., he and his wife built this replica of the pusher plane he flew in 1916. Bullock says the plane requires constant maneuvering to keep it aloft and has the gliding characteristic of a rock. It cruises at 55 mph. and with 25 gal. of gas can stay in the air five hours. (World Wide photo)

Air Policy Group Swings Into Action

Efforts to iron out a national air policy will move into high gear this week as the Congressional Air Policy Board holds its organizational meeting today, and the President's Air Policy Commission begins open hearings.

The President's group, headed by Thomas K. Finletter, began hearings last week with closed sessions considering testimony presented by key Government aviation officials. Beginning today, with Admiral E. S. Land, president of Air Transport Association leading off, industry will present its views.

Although Sen. Owen Brewster (R., Me.) presumably is in line for the chairmanship of the Congressional board, with Rep. Carl Hinshaw (R., Calif.) as vice chairman, there was some feeling last week that Hinshaw might get the top spot.

Brewster's not-too inspiring role in the recent Hughes investigation may weigh against him. Possibly a more important consideration is that the Maine Republican is firmly committed to the chosen instrument policy of international transport operations, and committee members feel that as chairman he might let that theme dominate the deliberations.

Secretary of Commerce Harriman was the first witness at the Finletter Commission's initial closed hearing. He was followed by Garrison Norton, chairman of the Air Coordinating Committee; William C. Foster, Undersecretary of Commerce, CAB Chairman James Landis, James Webb, Director of the Budget, John Nicholas Brown, assistant Secretary of Navy for Air, and W. Stuart Symington, assistant Secretary of War for Air.

AFA to Meet

Air Force Association will hold its first convention Sept. 15-16 in Columbus, Ohio. Boasting 111,208 paid members, the AAF alumni association now has 145 squadrons throughout the country. Adoption of a 1948 program, election of officers and orientation on National Guard reserve and regular Air Force problems will dominate the program. Speakers include W. Stuart Symington, Secretary of the Air Force, General Carl Spaatz, USAF commander; Gens. George Kenney, Curtis Lemay and George Stratemeyer and AFA president James H. Doolittle.

Bellanca Aircraft Resumes Work as Strike Settled

Workers of the Bellanca Aircraft Corp. at New Castle, Del., have ended the labor dispute which had been in progress since July 15 by ratifying an agreement reached earlier by negotiators for the company and Local 840, United Auto Workers, CIO.

The Bellanca Corp. is preparing to resume operations this week following settlement of the nearly two months old dispute. About 100 workers are employed in the plant.

The new agreement includes the union shop. Other terms include seniority by occupational family groups; a revised vacation plan; simplified grievance procedure, a no-strike pledge on the part of the union and a guarantee on the part of the company against suits or other proceedings under the Taft-Hartley Labor Act.

Racing Pilots Ask For New Rule Changes

Aftermath of the National Air Races at Cleveland during Labor Day weekend indicates major revisions in racing rules next year as a result of the terrific pace of this year's contests that resulted in one fatality and four crack-ups in the Thompson Trophy Race alone.

Meeting after the races the National Professional Racing Pilots Association came up with the following recommendations that will be considered at a meeting of National Air Race and National Aeronautic Association officials in Washington early next year.

■ **Cut the Thompson Trophy** field from 12 to 10 planes thus eliminating the dangerous free-for-all around the first pylon.

■ **Limitations on Degree** to which standard engines can be souped up for the speed events. At least three engines failed during the Thompson race in an effort to get too much power from them.

■ **Improved Methods** of signalling pilots during the races and addition of flash reflectors to pylons making them more easily visible from the air. Many pilots reported that they were unable to see the checkered flag signals from the ground and had difficulty locating pylons in ground haze.

■ **Earlier Qualifying Trials** and impounding of qualified planes between qualification runs and final race time.

Criticism of the lower echelon race management ground personnel by the pilots was particularly bitter. Pilots feel that the pre-war race personnel are unable to handle the race-horse starts of military type planes. Specifically, they blame the ground handlers for allowing a 13th plane to get off the ground into the 12 plane Thompson Trophy Race.

Cook Cleland, Thompson Trophy winner, and owner of the Goodyear Corsair in which Anthony Janazzo was killed, disclosed that both his other Corsairs lost exhaust stacks during the race leading him to believe that Janazzo's death was caused by carbon monoxide poisoning resulting from loss of an exhaust stack too close to the engine cylinders. William Eddy was dragged from his P-51 cockpit to the hospital after finishing the Bendix Race with a severe case of carbon monoxide poisoning.

AVIATION CALENDAR

Sept. 15-17—Air Force Association, first annual convention, Columbus, Ohio.
Sept. 15—International Air Transport Association technical committee, Nice.
Sept. 15-18—Second Regional CAA conference, Atlanta.
Sept. 17 — ICAO meteorological division, Montreal.
Sept. 17—SAE metropolitan section (N.Y.) Navy research inspection tour (Sands Point Lab, Long Island) and symposium (Hotel Pennsylvania, N.Y.C.) on training devices and instrumentation.
Sept. 23—ICAO aerodromes, air routes and ground aids division, Montreal.
Sept. 23—ICAO joint air/ops committee meeting, Paris.
Sept. 23-25—AIES middle eastern district meeting, Dayton, Ohio.

INDUSTRY OBSERVER

► **AAF is considering an order for 15 Northrop Pioneers, tri-motor transport, for use as ATC rescue planes in the Arctic. Another order for 40 Pioneers from TACA hinges on CAB approval of Waterman Steamship Co. purchase of majority interest in TACA from TWA.**

► Official mach number calculations for the Navy's two record-breaking runs in the Douglas D-558 credit Comdr. Turner Caldwell with reaching mach .828 while averaging 640 mph and Marine Major Marion Carl with mach .831 when he averaged 650 mph.

► **McDonnell Aircraft Co. now has a backlog of about $36,000,000, largely military business. Company's Navy designation has been changed from D to H because of conflict with Douglas. The Banshee is now designated the XF2H-1.**

► Ground tests on Beech's model 34 feederliner transport have been delayed because of difficulty in obtaining engines. Beech plans to make tests with both Lycoming and Continental engines.

► **First Cessna model 170, four place, high-wing, all metal personal plane, is expected to be finished this month. Cessna hopes to market it in the $5,000 class.**

► Rawdon Bros. have received a CAA approved type certificate for their wartime developed T-1, a tandem, low wing personal plane.

► **Sperry Gyroscope Co. has started quantity production on its new electronic analyzer for aircraft power plants, which locates and analyzes engine troubles during flight.**

► Convair liners will be equipped with safe flight indicators, a 7 oz. stall warning indicator manufactured by the Safe Flight Instrument Corp., White Plains, N. Y.

► **Navy interest in turboprop units is increasing as evidenced by new Bureau of Aeronautics research and development contracts for gas turbine propeller projects. Navy borrowed AAF General Electric TG-100 unit for Ryan XF2R-1 flight tests. Now Navy turboprop contractors include Pratt & Whitney, Chrysler, Allison, Ranger and DeLaval. All except Ranger also have AAF development contracts for turboprop units.**

► Second Lockheed Constitution is now nearing completion. It is being fitted out with litter equipment for use as an air evacuation and hospital plane. It is scheduled to go directly into Naval Air Transport Service. First airplane will continue as test ship.

► **Beech has signed a contract for the delivery of three model D-18S twin-engine light transports to the Portuguese Navy. Two of the planes will be standard passenger versions with the third equipped as a special high-altitude photographic plane. Beech also delivered three D-18C's to the Argentine Navy.**

► First combat aircraft "De-mothing" operation is now under way at Tinker Army Air Base, Okla., where 100 Boeing B-29's are being taken out of storage status and modified for active service.

► **Winning pilots in the National Air Races at Cleveland who used Kendall Oil in their planes received a bonus amounting to 10 percent of their winnings from the Kendall Oil Co. Thompson Trophy winner Cook Cleland got an extra $1,950 from Kendall.**

► Cleland plans to ignore all barnstorming offers to concentrate on his fixed base operations at the East Euclid Ave. Airport, Willoughby, Ohio, but will enter his two remaining Goodyear Corsairs in the Thompson race next year.

► Look for a boost in Goodyear Trophy prize money from this year's $25,000 that may make it the most profitable event on the program for pilots in view of the low cost of the lightplane racers involved. Course will also be changed so that the entire race will be visible from the grandstand.

► Final count on the 1947 National Air Races indicated a $25,000 deficit on two day total attendance of $171,000 with the third day's program washed out by heavy thunderstorms.

► War Assets Administration is studying possibilities of enabling its aircraft parts and components agents to widen their export sales in anticipation of dwindling domestic markets.

EFFECT OF TAX CARRYBACK CREDITS

Representative Aircraft Companies

(For six months ended June 30, 1947)

	Net Loss Prior To Tax Credit	Tax Credits	Net Loss
Beech	$4,366,135	$2,803,805	$1,562,350
Bell	735,934	525,000	210,934
Boeing	5,720	70,000	†64,280
Consol Vultee*	2,478,033	1,708,260	769,827
Curtiss Wright	5,241,837	5,000,000	241,837
Douglas*	6,612,307	5,960,000	752,307
Republic**	2,134,220	1,598,000	536,200

Notes † Profit * Six months ended May 31 ** Three months ended March 31

Tax Carryback Credits Are Aids To Many Aircraft Manufacturers

Deficits are smaller; profits have been converted from losses; heavy development expenditures have been financed in this manner.

Tax carryback credits continue to aid many aircraft companies. The industry is one of the few in a position to use such carryback adjustments during 1947 with respect to unused excess profits tax credits of previous years.

Without such tax credits, deficits from current operations in many instances would be much larger than reported. In a few, nominal profits have been converted from large losses thru the tax credit device. For the most part, heavy development and experimental expenditures have been financed in this manner. For example, North American Aviation reported a net profit of $303,487 for the nine months ended June 30, 1947. This was after application of a tax carryback credit of $4,260,500 and greatly facilitated the company's ability to absorb the $8,000,000 loss in discontinuing the Navion program.

▶**Carryback Prominent**—Tax carryback credits played a prominent part in 1946 results for the aircraft industry, minimizing many deficit operations. Contrary to popular belief, such relief did not come to an end with the closing of the 1946 year. Under Section 722 of the Internal Revenue Code, it remains possible for companies to continue to offset current losses with unused excess profits tax credits of prior periods.

This tax credit device has been particularly helpful to those companies having a broad tax base, generally established in prewar years. This took one of two forms, either the capital investment was large or a high level of earnings was previously recorded. This circumstance eliminated a number of aircraft companies from obtaining the full benefits of the tax carryback provisions. The early history of most aircraft units was devoid of sustained earnings and not all were able to show a large enough capital base.

▶**Grumman Writes Off**—Grumman Aircraft & Engineering, unlike some, without benefit of tax credits was able to make substantial write-offs last year and still report a profit. The company charged $1,603,013 as the tooling and development expense on its Mallard program and was still able to show a net income of $337,771 last year.

The accompanying table illustrates the effect of carryback tax credits during the first six months of this year. The amount of relief obtained in this manner is indeed substantial and has the very important advantage of husbanding cash resources. It is to be expected that such tax credits will continue to be operative during the remaining periods of this year and must be considered in any projection of aircraft earnings.

As shown in the table, Boeing applied a very nominal tax credit, only $70,000 which resulted in a net profit of $64,280 for the first half of 1947. However, during 1946 the company utilized a tax credit of $4,726,126 which more than offset the development expense of a discontinued project, $2,189,016 as well as covering $1,390,635 representing previous years income tax liability.

▶**Credits Determined**—In a number of cases, tax credits and liabilities remain to be determined. United Aircraft Corp. provides an outstanding example in this respect. During 1946, this company used tax credits totaling more than $12.5 million which facilitated a net income of $6,060,750 for the year. For the six months ended June 30, 1947, the company reported a net income of $3,416,873 without benefit of any tax credits. However, in a footnote to its recent financial statement, United Aircraft reports that in 1947 it filed claims for tentative carryback adjustments with respect to the unused excess profits tax credits and the net operating loss for the year 1946, and the amount collected therefrom exceeded by $1,103,000 the amount previously recorded in the accounts for 1946. Further, the company filed claims in the amount of $1,339,674 for federal income and excess profits tax credits applicable to prior years which resulted from the reallocation of amortization of emergency plant facilities to the shortened emergency period.

▶**United Gets Capital**—Early in the war period, United Aircraft Corp. sold some $26 million in preferred stock. The purpose was to broaden the company's tax base and provide additional working capital as needed. When these securities were marketed the inference was made that at the end of the war they would be retired as they will have had served their purpose. However, no such course was followed. Instead of calling in the preferred stock and reducing the capitalization in the process, the company has added to its capital structure. The company recently arranged for a three year line of bank credit to the extent of $25 million. This credit is to assist the company in financing the acquisition of various government plant properties. As of June 30, 1947, $15 million of this bank credit had been drawn down.

Nevertheless, the company remains in a very healthy financial position despite its borrowings. After paying the government $10,150,000 on June 30 for various plant properties, United Aircraft showed cash and marketable securities of more than $77 million. Since June 30, the company paid the balance of $9,850,000 due for the government properties acquired. However, the management reports that large sums of money will be required for the turbine laboratory now under construction.

▶**Credits Beneficial**—There is little doubt that the tax carryback credits have developed to be one of the most beneficial devices assisting many aircraft companies through a difficult period. It has provided support to limited development programs which may be expected to find reflection in future periods.

—Selig Altschul

NOTAM Spoiled?

To the Editor

I have received the first copy of the revised Weekly Notice to Airmen. I have always considered it as one of the most important publications to private and commercial pilots. Now in its new form it is of little value.

In the mails this week I also received from CAA the following books:

A Laboratory Study of Soil Stabilizing Effectiveness of Artificial Resins With Special Emphasis on Aniline Furfural Resins.

Location of Underground Cable Failures.

Development of Flight Level Indicator.

An Investigation of Sight Requirements for VHF Radio Ranges.

Development of the Ultra High-Frequency Radio Range, Part 3.

An Automatic Monitor System for Radio Ranges.

Theoretical Considerations of Ultra High-Frequency Simultaneous Radio Ranges.

Flight Test of the United Air Lines Warning System.

Measurements of Noise Radiation from High Voltage Transmission Lines.

Would it not be better to use these funds for the safety of all pilots in a more concrete way if the CAA is so short of funds?

I am a firm believer in research and technical developments but I think that the flying public should know how the money allotted to CAA is being spent.

I sincerely hope that CAA will see fit to reconsider their action on the Weekly Notice to Airmen and believe they will if enough pilots request it.

W. S. Law, Manager
Fayetteville Air Service
Fayetteville, N. C.

Baggage Racket

To the Editor:

Here is a story for Aviation Week, but I must be an anonymous informant.

When I checked in at LaGuardia Field I had baggage weighing about 110 lb. My memory is that each trans-Atlantic passenger is allowed a maximum of 66 lb. and is charged 1 percent of the one-way fare for each kilo excess. I figured that I would have to pay about $70 extra.

The colored porter who grabbed the bags told me that I was "way overweight," but that he could save me a lot of money. He put them on the scale and said that, as I thought the extra would come to $70, and added that half of that amount to him would take care of the problem. Now, I'll fight anybody who challenges my integrity in personal transactions, but in business I'll operate in the most profitable way if I suspect that everybody in the situation is operating in the same way. So I paid the porter only $35 of the company's $70 that TWA should have received.

Later, on the plane, a girl, formerly with Time, told me that she had accepted the same proposition, but I don't know the amounts involved in her case. I am sure that everybody on the plane had done the same thing.

And I feel confident that the airline ticket people behind the counter, who let the porter do the weighing and accepted his figure of a total of 65 lb. for what any fool could have seen was a vastly heavier aggregation of luggage, are in on this profitable racket.

So what? So the airlines are being cheated out of revenue and their rules (or CAB's?) are being violated. So, if a 66 lb. weight limitation is out of date, as I think it is now that they have big planes and want the patronage of well-laden tourists, they should get it cut out, instead of allowing it to fester in this way. So, the planes are taking off with a greater load than is shown on the books. And the fact, if not the amount, is no joke in view of the "overload" talk in connection with recent takeoff crashes. Constellations carry 40 passengers and 40 of me would have added over 1,600 lb. that were never reported. Finally, none of us 40 likes to be involved in rackets just because we think we ought to save money for our employers.

LaGuardia leaves a bad taste in my mouth. Air France at LeBourget charged me $10 for the excess on the Paris-Frankfurt trip with no monkey business.

Tourist
Berlin, Germany

BOAC Mileage

To the Editor

With reference to an article which appeared in your Aug. 4 issue, giving certain statistics regarding airlines, you may be interested in the following comment that has appeared in the BOAC Reference Bulletin from London. It reads:

"Corporation records do not confirm these figures for BOAC route and aircraft mileages. At Apr. 1 our unduplicated route mileage was approximately 71,700 (which would give us by far the 'largest active route system in the world'). It is not clear on what calculation the Aviation Week figure of 45,846 miles can be based, though it is possible that the large difference between this and the actual figure of 71,700 may be because the American magazine calculated only one route between terminals where we were operating more then one service with different aircraft on different tracks (e.g., UK-Sydney by Lancastrian and by Hythe). As regards the figure of '409,048 plane miles weekly,' our records show a weekly average for scheduled services at Apr. 1 of about 510,000 miles."

C. A. W. Wynne,
Public Relations
Atlantic Division, BOAC

(*Editor's Note*—The figures were compiled by the Economic Bureau of the CAB.)

Taxpayer Protests

To the Editor

In your Aug. 18 issue there is an article which impresses me as being purely political and does not seem in tune with the flavor of McGraw-Hill publications. It has to do with an economy move which hit the CAA Airman's Guide.

I am a taxpayer as well as pilot. I have no idea how many federal taxpayers there are—but am told there are over 60 million employed people. So for the benefit of 21,000 subscribers to CAA Airman's Guide 60 million people have to "kick in." It appears to me as being just that if these 21,000 pilots want the information given in the Guide they should be willing to pay for it themselves in its entirety rather than have it subsidized.

It has also occurred to me that this information might be published commercially and furnish someone, or some group, with gainful employment and so take the government clear out of this much of the publishing business.

If we ever get this country straightened out economically, it seems to me that encouragement of subsidies will have to diminish and more people will have to pay their own way.

C. M. Loomis
Fairchild Engine & Airplane Corp.
Winfield, Kan.

Power Controls

To the Editor:

Just to prove I read every word of every issue of Aviation Week, I call your attention to Industry Observer Aug. 18, mentioning the Hughes power control system as the first use of power as the sole operating method.

Let me remind you of the Northrop N9M flying wings, which were flown early in the war and are still being used, and the Northrop XB-35, first flown in June, 1946. Both these airplanes used power control systems which were not, as you put it, "power boost," but in which the pilot's strength only operated a valve which in turn moved the control surfaces.

Al Cline
Director of Public Relations
Northrop Aircraft, Inc.

Atlas Corp. Acquires Control Of Convair; Howard Key Figure

Avco Manufacturing Corp. relinquishes Aviation holdings in deal with Odlum firm; observers expect new board will be closer attuned to aviation.

By WILLIAM KROGER

Sweeping executive changes are in prospect for Consolidated Vultee Aircraft Corp following decision by Avco Manufacturing Corp to relinquish control in a complicated stock deal which also will take Convair out of the non-aviation business and put Floyd Odlum's Atlas Corp in control of the Convair group.

Irving Babcock and Harry Woodhead, chairman of the board and president, respectively, of Convair are expected to resign along with at least seven other members of the board who have represented Avco.

▶**Howard Key Figure**—Key figure in the new set-up, it is foreseen, will be Ben Howard, recently assistant to Donald Douglas, who has joined Atlas Corp as "specialist in the aviation field." Howard will be on the new Convair board and may assume a vice-presidency. Howard, onetime race pilot and designer and manufacturer of private planes, is expected to have an influential voice in selection of the new Convair president. Odlum presumably will take over the Convair chairmanship.

Another almost certain selection for the board is Jacqueline Cochran Odlum, veteran pilot and wife of the Atlas Corp. president.

Avco's divestment of Convair is not unexpected. Since the end of the war, Victor Emanuel, Avco's chairman, has been anxious to take his company out of the aircraft business and concentrate on the ground transportation and consumer goods fields. A year ago, a proposed Convair merger with Lockheed bogged down in the late stages of negotiation.

▶**New Control**—In line with Emanuel's long held desires, Avco will now control a new corporation which will take over Convair's Nashville division (manufacturing kitchen and home appliances) and ACF-Brill Motors Co. (of which Convair owns 48 percent) and its wholly-owned subsidiary Hall-Scott Motor Car Co.

From a financial razzle-dazzle will come a Consolidated Vultee Aircraft Corp stripped of non-aviation interests, with an increment of about $6,000,000 in cash, roughly one-fourth less stock outstanding, and with Atlas Corp in a position to exercise much more control than Avco did.

Both boards of directors have already approved the plan. If Convair stockholders, at a special meeting Nov. 3, approve it, what will happen is this:

● **Convair Sells Subsidiaries**—Convair will sell its Nashville division and ACF-Brill to its present stockholders. For each four shares a stockholder owns, he will surrender to Convair one share plus $18.50. For this one share and the cash he will receive two shares in the new corporation which will take over the Nashville operation and ACF-Brill.

Convair has outstanding approximately 1,570,000 shares. If all present stockholders participate, Convair will get back approximately one fourth of these shares, or close to 400,000 shares. In addition, it will receive $18.50 with each share turned in, or upward of $6,000,000.

● **Stock Holdings**—Avco owns about 400,000 shares of Convair or approximately 25 percent. It will turn in 100,000 shares and take 200,000 in the new company, which will constitute nearly 50 percent ownership. Avco is then expected to sell its remaining 300,000 shares in Convair to Atlas Corp.

Ben Howard, recently assistant to Donald Douglas, will be on the new Convair board and may assume a vice presidency

Atlas now owns about 100,000 shares in Convair, or more than 6 percent. It will pick up an additional 300,000 shares, but because Convair's outstanding stock will be reduced, Atlas' 400,000 shares will have greater voting power than did the original Avco stock.

The net effect, actually, will be to transfer ownership of Convair from one well-financed holding company to another. An additional effect will be to put in the Convair driving seat a man with an active interest in aviation (Odlum) in place of one who has taken a dim view of aircraft manufacturing. (Emanuel)

▶**Changes Anticipated**—It is too easily to anticipate any change in Convair manufacturing policy. The development that is being awaited by observers is selection of the new Convair board. It may, overall, be closer attuned to aviation than is the existing board, heavily sprinkled with men whose backgrounds are more in automotive fields.

Odlum's interest in Convair may mean a new interlocking directorate case for CAB. Atlas Corp. is the largest single stockholder in Northeast Airlines which recently has been dickering for Convair liners. At the time Avco controlled American Airlines the carrier contracted for 100 of these planes, and CAB later ordered Avco to divest itself of control of the airline.

Lightplane Figures Revised

Due to typographical errors, some of the lightplane shipmeot figures in the Production Progress Report for the first six months of this year (AVIATION WEEK, Sept. 1), were shown incorrectly. Shipments of 2-place planes for January were 969 instead of 960, and for March were 789 instead of 780. Total 2-place shipments for the six months was as shown, 4,952.

Total 3- and 4-place shipments for the six months was 5,642, instead of 5,592.

Rear view of first flying channel wing airplane

New Channel Wing Nears Flight

Higher efficiency attained after tunnel tests are evaluated. Inventor sees competition with helicopters.

Willard R. Custer, Hagerstown inventor has advised AVIATION WEEK that his second Channel Wing airplane is expected to fly at Hagerstown, Md., in late October or early November.

Custer and some fellow townsmen have organized the National Aircraft Corp., to back the unconventional aircraft, and are confident of success believing that eventually a very large percentage of all fixed wing aircraft will use channel wings.

Their confidence is based on 100 hr. of successful flights already made with the first channel wing airplane in 1943-44 at Beltsville, Md. (*Aviation News*, June 2, 1947.)

Wind tunnel tests made in the spring of 1946 at Wright Field, and AAF Technical Report No. 5568.

► **Engineer Satisfied**—Don Young, Wright Field engineer was called as a witness in Custer's recent Federal District Court case in Washington on channel wing patents, and testified that in his opinion, based on wind tunnel tests, the channel wing was capable of direct lift. (Patent case concluded with court order to U. S. Patent Commissioner Casper Ooms, to allow four additional Custer patent claims.)

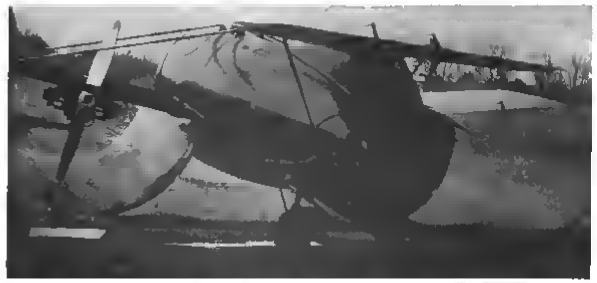
At Custer's Hagerstown workshop recently, two representatives of AVIATION WEEK, Alexander McSurely and Hal McFarland (special correspondent), inspected the original channel wing which flew at Beltsville, discussed the flights with the inventor, and saw motion pictures of the first test flights which fully corroborated the inventor's story.

► **Pilots Skeptical**—Custer said first plane used auxiliary conventional wings because he was unable to find a pilot to fly the aircraft with the unconventional channel wing alone. Large vertical and horizontal tail surfaces were added at the request of the pilot for additional control. Actually the principal factors in controlling the plane were amount of power used and propeller pitch, which governed thrust and amount of lift developed by the channel wing.

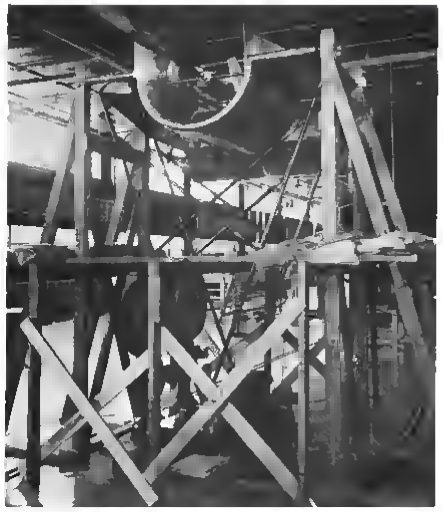
The Beltsville tests were witnessed by a number of AAF and Navy officers and CAA personnel who gave the strange craft its experimental license. The plane was limited to flights in the immediate area of the airport and to 100 ft. altitude, because of wartime restrictions. These limitations made the demonstration, as pictured on the film, even more remarkable. Performance was more like that of a helicopter, than an airplane, Channel wing aircraft takes off with negligible forward run, flies at slow speed, and spot lands accurately. Wind direction apparently makes no difference to this craft's ability to takeoff or land.

The first plane reportedly would takeoff at approximately 15 mph. forward speed and was never flown at a speed exceeding 60 mph.

► **Tunnel Tests**—A series of tests on the



Except for single tail instead of twin, second Custer plane will resemble this model closely



Engineers test channel wing at Wright Field

Electric motor supplied power for propeller at Wright Field

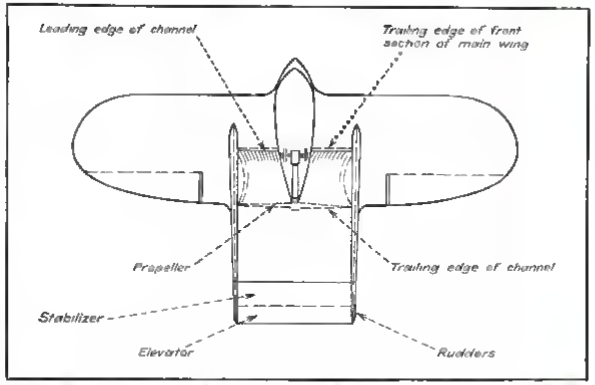
channel wing were arranged at Wright Field in the AAF's small five foot wind tunnel. These included a test of a ¼ scale powered model, covered in AAF Technical Report No. 5142, and a more extensive series of 53 tests of two models with channels of the same diameter but having different chords.

Concluding Technical Report No. 5568, Young observed the shorter chord channel was superior to the longer as regards resultant force, moment, and change in trim due to power change, and a design incorporating the short channel should have a distinct advantage. Young also reported on static lift tests of the ¼ scale model which he witnessed at Hagerstown.

While there is no indication that AAF Air Materiel Command will continue its channel wing studies, due to allocation of research funds to other projects, Custer declares that his second plane, incorporating a short chord channel as recommended by Young, will give a performance that will force not only military research engineers, but the commercial aviation industry as well, to accept his development as practical and an improvement over existing wings.

Basically Custer's theory behind the development may be summarized thus:

The channel wing utilizes a principle of lift created by air which is moved over the airfoil, drawn or sucked, by the propeller at rear of channel, creating a powerful lifting force on the wing before the plane starts its forward roll. The channel shape of the wing confines the air within a venturi so that flow depends only on suction of propeller for constancy and is not materially affected by wind changes and other variables.



Single engine personal plane with channel wing design by inventor may be first production article if tests of current model meet expectations.

► Efficiency—Custer calculated that his first plane supplied 75 percent of lift necessary for takeoff before craft moved forward, so that only 25 percent additional lift was required to get it airborne. With the new and more efficient channels he expects to get an even greater lift and thrust force while the plane is stationary, perhaps even enough for vertical takeoffs.

The second plane will not use auxiliary wings and will depend entirely on the lift of its channels.

Besides greater lift efficiency, the main advantage of the channel wing is said to be safety. Lift is controlled by the propeller pitch so that aircraft can rise almost vertically and descend the same way as well as fly at reduced speed in event of lowered visibility.

The Hagerstown group hopes to prove the efficiency of the channel wing, and license it to aircraft manufacturers for production. They prefer to continue research and development on other uses rather than enter the manufacturing business. They are willing however to start small scale production, if necessary to get their product recognized and adopted.

Stall-Resistant Craft Seen Through New Design Data

Principles outlined for stall-proofing lightplanes; NACA studying two-control system possibilities.

Personal aircraft accidents resulting from the stall now may be virtually eliminated through the use of design data currently available to the engineer. Complete control of the airplane at slow speeds and high lift coefficients is obtainable through application of principles developed through extensive research. Not only may new aircraft be designed with stall-proof characteristics but existing production models may be modified with a minimum of tooling and production line changes to give them stall resistant qualities.

If the longitudinal control of an airplane is insufficient to maintain an angle of attack at which the entire wing is stalled, the airplane normally will be laterally stable and controllable throughout its entire range of attitudes and maneuvers.

By restricting the range of elevator "up" movement to an angle slightly less than that required to stall the airplane, the airplane can be rendered incapable of stalling and, therefore, of spinning. This restriction does not impose a design or modification handicap, since the majority of present day personal aircraft have a range of elevator "up" movements only slightly above that required to stall the airplane.

▶ **Objection Refuted**—One of the most frequently voiced objections to restricted elevator control is that it limits maneuverability of the airplane in the air. Repeated tests and thousands of hours of operational experience have proved the fallacy of this contention with respect to non-acrobatic maneuvers, and both loops and minimum radius turns have been accomplished frequently with limited elevator travel, both without using the full deflection available under full power conditions.

The major effect of restricted elevator control upon the landing characteristics is to increase the sinking speed, resulting in a greater impact on the runway. This makes necessary longer landing gear strut travel to absorb this greater shock. In some cases the horizontal distance required to get from a height of 50 feet to the ground can be cut in half. Restricted elevator control also drastically minimizes the skill required to execute a landing insofar as the stick is pulled all the way back and held there as the airplane glides down to contact the ground.

A basic problem of restricted elevator control airplanes is the difficulty in the design of landing flaps. Lowering flaps normally produces a negative (nose down) pitching moment which cannot be accommodated by the elevator since it is already at the limit of its "up" travel. Although the problem is substantially unsolved, research is being pressed on the design of flaps with very small pitching moments and numerous methods are being investigated and have been used by various manufacturers which provide a measure of solution to the problem.

▶ **Controlled Stall**—If the wing root can be designed to stall first with the stall progressing towards the tips, ample stall warning can be provided, the loss in lift will tend to restore the airplane and the aileron effectiveness maintained for a period sufficient to lower the nose of the airplane. Root stalling can be provided in a variety of ways most common of which is "washout" in which the wing panel is "twisted" either geometrically (by the design of the assembly jig) or aerodynamically (by the selection of progressively changing sections towards the tip). This results in the wing root area flying at a higher angle of attack than the tip area, in which case the stalling angle will always be reached first by the root with the tips stalling last.

Wing taper and sweepback, either separately or in combination promote tip stalling through the spanwise drift of the boundary layer. A substantially rectangular platform comprises an effective method of producing stall resistant aircraft.

The use of slots or "slats" along the wing leading edge near the tip is an effective method of preventing tip stall. Location of these auxiliary lift devices in the region of the ailerons preserves stable airflow over the latter at angles of attack substantially higher than that of the unslotted portions of the wing.

Another promising method is the use of a sharp leading edge near the wing-fuselage juncture together with careful filleting of the juncture, which indicates promise in promoting root stall. Still another method is the use of spanwise protuberances mounted on the nose of the wing in such a location as to cause turbulence at a predetermined angle of attack, thereby promoting stalling of the root.

▶ **Restricted Rudder Control**—Restricting the angle of deflection of the rudder would inhibit large yawing motions of the airplane which frequently result in stalls. In conjunction with this restriction a large degree of directional stability should be provided making the reduced rudder travel effective for correcting yawing motions.

One of the important problems inherent in stall-proof design is the different longitudinal stability characteristics of the airplane with power on and power off. Present conventional personal aircraft are so balanced that, for a given elevator setting, much higher angles of attack are attained with power on than with power off. To utilize fully the advantages of restricted elevator control, it is important that the airplane be so designed that for a given elevator setting it balances at approximately the same angle of attack with power on or off. One method of achieving this is to design the propeller axis canted downward, which eliminates or greatly reduces power effects by producing a nose-down pitching moment, which counteracts the nose up moment due to the slipstream on the deflected elevator.

▶ **Lateral Control Systems**—Disturbances of the airplane's lateral axis are normally created at angles of attack near the stall by movement of the ailerons. This can be minimized through the use of lateral controls which do not promote stalling when deflected at the airplane's steepest attitude. One of the most effective of such methods is the use of a differential linkage in which the upward deflection of one aileron is considerably larger than the downward deflection of the opposite aileron, thereby inhibiting tip stall created by large downward aileron deflection.

One of the most pressing problems in stallproof personal aircraft design is the application of flaps to restricted elevator control systems. With four-place stallproof designs now nearing the flight test stage, their increased weight and power make the problem of slow landing of pressing importance. Although "pitch proof" flaps of conventional design appear impossible of attainment, several interesting systems are now under investigation and these will be accelerated through the research and test stage in the coming months. One possible solution is the use of a dive-brake on the upper surface which, when moved up at the trailing edge, tends to flatten out the wing pitching moment.

▶ **Research Program**—One of the important research programs in the field is under way at the Langley Memorial Laboratory of the National Advisory Committee for Aeronautics, which is investigating a large number of possible "two-control" systems linking the rudder and ailerons, stabilizer and flaps and various other combinations in flight with a Fairchild PT-19.

It is clearly recognized that the personal aircraft must far exceed the minimum requirements for satisfactory stability, control and stallproof characteristics in order to reduce required piloting skill to a minimum. Current research and development work, both in Government and industry, are being directed towards this end.

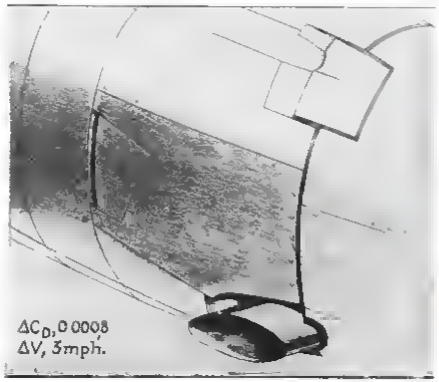
(EDITOR'S NOTE: The foregoing is a compilation of reference material far too extensive to permit listing here. However, if you desire a comprehensive bibliography of stallproof personal aircraft design data, kindly address a postcard to the editors.)

Searching Drag Studies Check Speed Impeders

Five exhaust-stack installations are analyzed in this picture-and-caption presentation

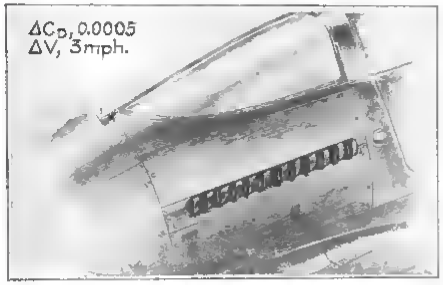
Part VI

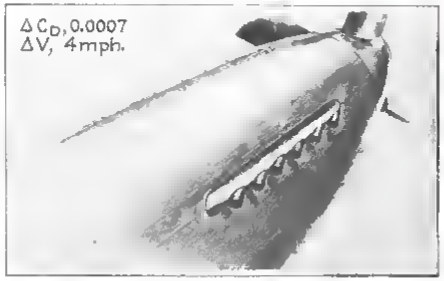
Large protrusion and air leakage around large-bore stovepipe exhaust stacks on this craft account for drag coefficient increment of 0.0021. Engine operating tests at low speed with both original exhaust stacks and individual jet exhaust units indicated that increase in thrust resulting from use of latter would increase plane speed about 13 mph. over that with original installation. This thrust increase includes difference in drag of original stacks and individual jet exhaust stacks. Calculations indicate that with use of optimum size jet exhaust stacks, further increase of approximately 3 mph would be possible.



Large-bore exhaust stack with large leakage gaps around it increased drag by 0.0008 on this plane. Recommendation is that use of stovepipe stacks of this type and that shown at left should be avoided because of large form drag.

Removal of seal from exhaust opening of this aircraft increased drag by 0.0010. Form drag of units shown at top has been avoided in this design, but large amount of air leakage from compartment behind engine out through large opening around stacks accounts for excessive drag of installation. Some of this drag would be reduced by directing leakage flow rearward. Much larger gains can be obtained with installation featuring individual jet exhaust stacks.





Removing sealed metal fairings enclosing stacks on these two planes increased drag coefficient 0.0005 for that seen at left, and 0.0007 for that at right. These exhaust stacks are considered relatively good installations.

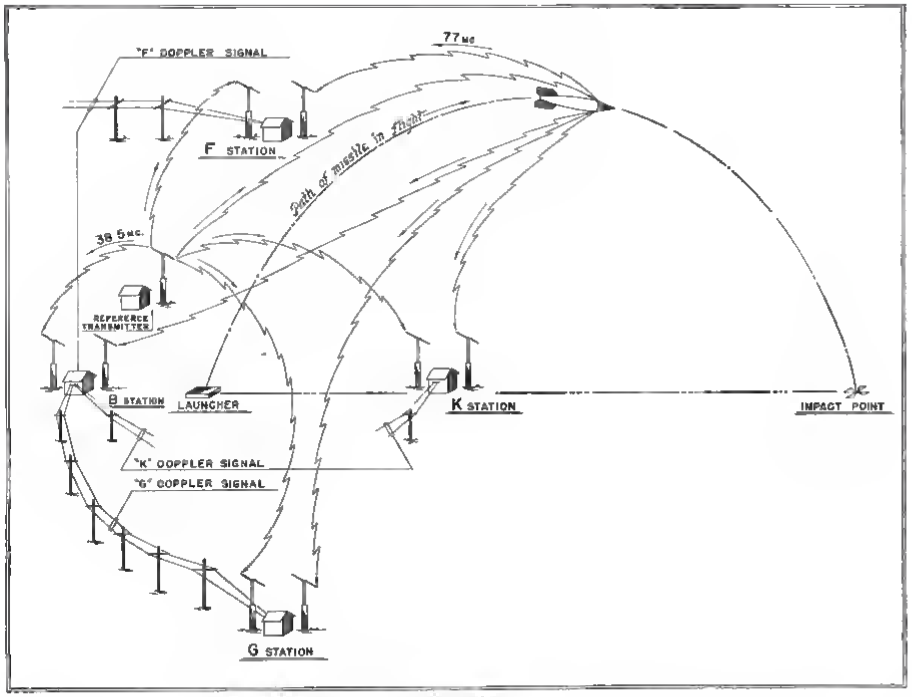


Fig. 1. First sketch of DOVAP installation layout at White Sands range.

Reveal Doppler Tracking For Guided Missiles

Basic factors underlying ingenious recording method outlined in initial presentation.

Present intensive testing programs indicate that the future of guided missiles looms large on the development horizon. Perfection of instrumentation is probably the most important factor in this research phase, and one vital consideration is determination of velocities and positions of the missile. Evaluation of this test aspect is now being investigated with the beacon doppler system—DOVAP (doppler velocity and position).

▶System Description—In general form, DOVAP involves transmitting a radio frequency wave from ground to missile, receiving and amplifying this signal, and transmitting back to the ground a second signal having constant phase relationship to the signal received at the missile. Heterodyning of the transmitted and received signals yields the magnitude of the radio frequency doppler effect. Instead of depending upon energy reflected from the missile body—as is the case when using any of the so-called reflection doppler systems—a signal of considerably greater amplitude is radiated by a missile beacon, extending system range.

As revealed in a paper before a recent meeting of the Institute of the Aeronautical Sciences ("Full-Scale Free-Flight Ballistic Measurements of Guided Missiles," by L. A. Delsasso, L. G. de Bey, and D. Rauyl), basically DOVAP provides for transmitting a stabilized continuous radio frequency wave from a fixed ground station to missile, doubling the frequency of this transmitted wave in the missile receiver, and transmitting the doubled frequency from missile to three or more fixed ground receivers. By amplifying and doubling the received reference frequency and retransmitting this signal, fixed phase relationship is obtained and this eliminates technical difficulties encountered in attempting the procedure to receive and transmit on a common frequency.

Frequency of the missile signal as received at each ground station is heterodyned with twice the frequency of the original transmitted ground signal. This is accomplished by receiving this reference frequency on a separate receiver at each ground station and doubling the frequency by the same method used in missile receiver. Beat or doppler frequency is produced by mixing radio frequency output from the two receivers. Land wires are used to transmit the doppler signals to a common point for 35mm records.

Typical DOVAP field setup is shown in Fig. 1, with the various ground stations located approximately as at White Sands.

Each doppler frequency cycle represents a change in path length from transmitter to missile to ground receiver of one half wavelength of reference frequency. From the differences in change of path length to three or more receivers, the spatial coordinates of the missile at any instant may be computed by solving a group of equations representing the intersection of three or more ellipsoids (spheres if the transmitter is coincident with one of the receivers).

Data obtained with DOVAP in final recorded form consist of a long and continuous series of doppler cycle sine waves from each

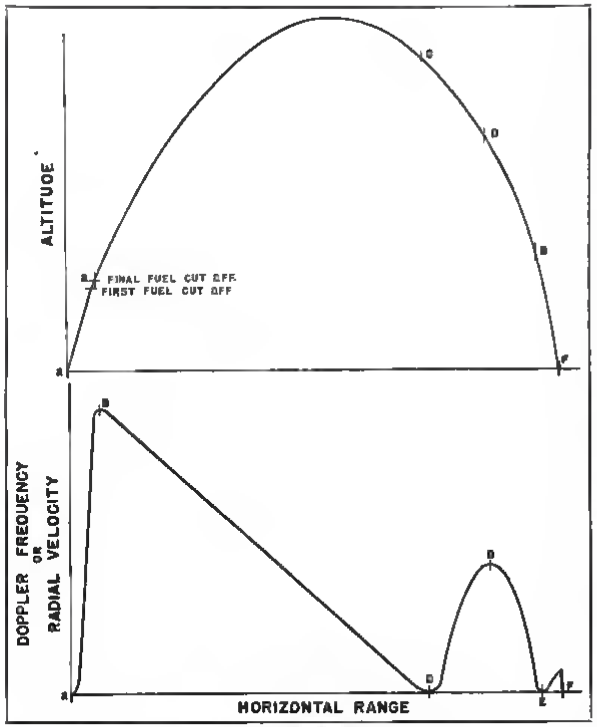


Fig. 2. Representations of rocket trajectory and doppler frequency.

receiving station, and a time calibration of the film record. Assuming that the sine wave traces are continuous from the instant the missile leaves the ground, one point is established on the trajectory, whose coordinates are known. Most any other known point would serve as well, and in practice (since the doppler traces are not always continuous from the start of the trajectory) a point some few hundred or thousand feet along the trajectory, as determined by phototheodolites, is used.

Starting at the known point, each doppler cycle represents a change in total distance from transmitter to missile and from missile to one of the ground receivers of one wave length at 77 mc or approximately 12.5 ft. If n is number of doppler cycles corresponding to any point along the trajectory the $n\lambda$ is the total change of path distance as the missile moves from the known point to the point to be determined. Hence, it is necessary to count (from the known point) the number of doppler cycles in each channel corresponding to each desired point along the trajectory. It is most convenient to refer to the points along the trajectory in terms of the time elapsing from the start of the flight. If the value of n is determined for successive time intervals, say ½ sec, then the points determined will give the position of the missile at ½ sec intervals.

Coordinates (x, y, z) of any point on the trajectory may be evaluated by the solution of two linear equations and one quadratic equation, whose coefficients may be determined from known factors involving the coordinates of the ground receiving and transmitting stations, the initial point, and the values of n obtained from the film record. Solution is via electronic computing machine and it is expected that an 800 point trajectory can be computed in the time of flight of the missile—approximately 7 min. Following completion of the problem the machine may be arranged to print the coordinate data in tabular form. It will further tabulate first and second differences between successive points from which velocity and acceleration may be computed.

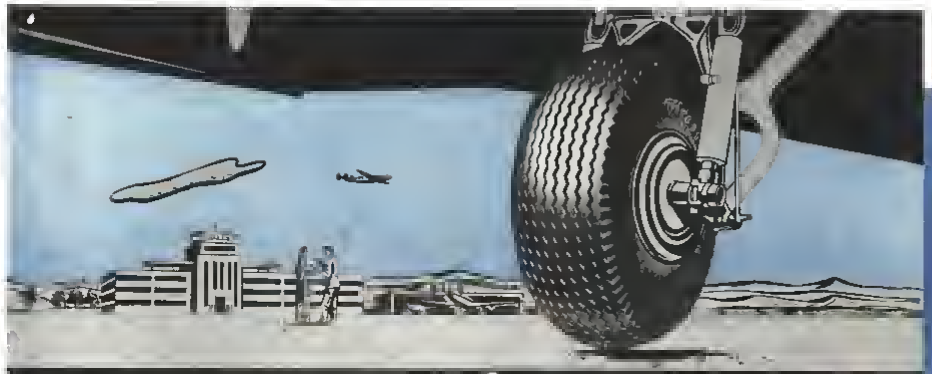
► **Recording Factors**—DOVAP measures radial change of distance from each of the ground stations. An examination of a typical trajectory (A-4 rocket) reveals that in general there are three points at which the tangent to the trajectory is perpendicular to the line from a particular ground station to the point on trajectory. Thus, the missile is moving in such direction that the radial change of distance is zero, and the doppler frequency will also be zero.

Fig. 2 shows the approximate form of a typical A-4 trajectory and a curve of doppler frequency throughout trajectory. First point at which zero radial change of distance occurs is at the launching location. (For practical purposes it is assumed that all ground receiving stations lie in the same plane and that the missile takes off in a direction perpendicular to this plane. Actually, each ground receiving station may be at a different height—above or below the launching point—and accurate data reduction depends upon precise determination of the coordinates of each station.)

The missile reaches a point just beyond the trajectory peak before the doppler frequency again becomes zero. Between the launching point (A) and point (C) the missile is moving away from all stations. From (A) to (B) the missile velocity, and hence the doppler frequency, is increasing rapidly because of thrust of the burning jet. At point (B) fuel is cut off and the missile continues on its upward path with decreasing velocity until, finally, force of gravity overcomes the vertical component of velocity, and the peak of the trajectory is reached. The missile continues to move away from the receiving stations because of the remaining horizontal component of velocity until point (C) is reached. Here, horizontal velocity and vertical component of velocity resulting from the earth's gravitational field combine to give a net radial velocity of zero.

Between point (C) and the impact point (F) the velocity increases steadily, but because of the geometric relation of trajectory to receiving stations, the radial velocity increases up to the point (D) and then decreases to zero again at the third point, (E). Between (E) and (F) the radial velocity rises until the missile strikes.

This shows the need for d.c. response throughout the recording system. If the response were other than d.c., many cycles of doppler frequency would fail to record as the frequency approaches and becomes zero at each of the points previously mentioned. Also, when the radial velocity is low and true velocity is comparatively high, each doppler cycle may represent a movement of the missile of several hundred or even several thousand feet. This is particularly true at point (E). Thus, the loss of a few cycles of doppler, either because of miscounting of the final record or poor response of the recording system, may introduce large errors in the computed trajectory coordinates. After considering other parameters which affect the accuracy of the system, a permissible error of 1 cycle in 100,000 is allowed under present data reduction methods. Accordingly, the recording system has been designed to accomplish accurate reproduction of all doppler cycles present at the output of the ground receivers.



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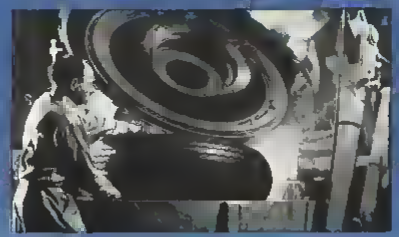

The Firestone Sky Champion tire has no weak spots because it is cured under accurately-controlled pressure and temperature conditions.

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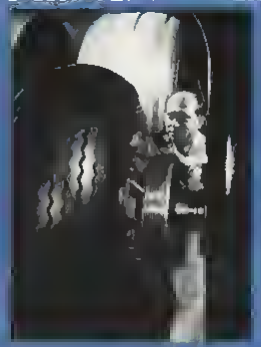
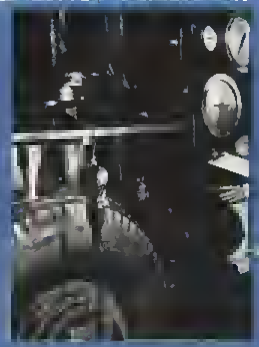


And they must prove their ability to resist impact loads far more severe than those encountered in actual service.



SHIP BY AIR

GO BY AIR

FIRESTONE AIRCRAFT COMPANY • AKRON, OHIO

ENGLISH PRODUCTION LINE

Shop of Miles factory packed with Gemini, personal transports. These plywood construction planes are equipped with retractable landing gear and feature top speed of 150 mph with two 100 hp Blackburn Cirrus engines. (British Combine photo)

International Currency Needed Says South Atlantic ICAO Conference

New system would eliminate monetary losses by travellers.

(McGraw Hill World News)

RIO DE JANEIRO—The Regional Conference of South Atlantic of the ICAO ended recently after seventeen days of debates in Hotel Quitandinha in Petropolis. Representatives of all the countries interested in civilian flying in this zone attended the Conference that dealt mostly with safety problems along South Atlantic routes.

Meteorology was one of the chief themes of the meeting and the gathered delegates decided to recommend to their respective governments the establishment of regular weather-stations along the routes equipped, if possible, with radar installations.

Technical sub-committees dealt with matters such as uniform methods for the search and rescue of airplanes that suffered accidents, safety devices aboard the aircrafts and on airports, landing light systems, etc.

One of the major decisions was the basic agreement of all those present to create an international currency for transactions connected with airplane reservations. For instance, a passenger planning to tour the world, purchases approximately the necessary amount of the air currency before leaving home and buys his tickets any place he wants without getting involved with banks and without subjecting himself to possible losses in successive changes of currencies. The delegates suggested that hotels and airports, services (restaurants, bars, etc.) also accept the air currency.

The Conference did not deal with tariffs as it is a matter pertaining only to a meeting of airlines. The International Air Transporters Association scheduled a meeting next October in Petropolis to discuss tariffs.

Czechs Receive Planes From Great Britain

LONDON—Three fighter squadrons totalling 72 Spitfires, a fighter bomber squadron of 24 Mosquitos, and a communication flight of three Austers and one Anson are among the planes and equipment to be provided by British government to Czechoslovakia.

Some of the aircraft have been delivered and the remainder will be sent as soon as possible. The Czechoslovak government is to pay £354,000 to Britain for the portion of the aircraft and equipment not already supplied as mutual aid under the provisions of the protocol of Jan. 21, 1943.

The sum of £50,000, part of the £354,000, has been charged against the Czech government as part of the war-time credit granted by Britain. Payment of the balance will be made in sterling through the channels established by the monetary agreement signed in London Nov. 1, 1945.

African Carrier Expands Fleet

JOHANNESBURG—South African Airways' fleet of aircraft has increased considerably since operations were resumed in 1944.

Original fleet of six Lockheed Lodestars has been increased to 20 Lodestars, 3 Skymasters, 2 Dakotas and 1 DeHavilland Dove. Three more Skymasters recently were delivered and eight Vickers Vikings and another Dove are to be delivered soon. With the acquisition of these aircraft South African's fleet will total 41 aircraft, with an aggregate passenger capacity of nearly 800.

Diversity of traffic accounts for variety of types, and the fact that there are only two terminal aerodromes in the Union capable of accommodating the Skymasters.

▶ Joint Operation—Government-controlled South African Airways operates joint services with BOAC between Johannesburg and London, with Central African Airways between Johannesburg and Salisbury (Southern Rhodesia) and with Deta between Johannesburg and Lourenco Marques under bilateral agreements with the governments of the countries concerned.

Company officials recently inspected Sabena's Douglas DC-6, the first to visit South Africa, but gave no indication whether or not an order would be placed for this type of plane.

S. A. Airways showed a profit last fiscal year. Revenue earned to March 31, 1947, was £1,789,993, of which £1,015,418 accrued from internal services.

FOR BAILOUT SAFETY

New British pilot ejected seat features positive action at high speeds. Pilot B. I. Lynch, who tested the device at 505 mph., demonstrates its operation. Protective covering pulled down to shield face automatically sets off charge which ejects seat and pilot from plane. Seat falls away shortly after clearing plane. (World Wide photo).

Hardsurface runways under construction at Teterboro early this year. (Schell news photo)

Expanded Teterboro Airport Offers Major Base Services

Fred L. Wehran's ambitious reconstruction program puts field in competition with metropolitan terminals; nonscheduled plane movements exceed 1,000 per day.

By ALBERT E. SMYSER, JR

A $2,000,000 expansion program is raising 25 year-old Teterboro airport, to major base status. This field is unique in the New York area, catering exclusively to nonscheduled flights and itinerant pilots flying every conceivable type of plane, features low gas rates and absence of landing fees.

Activities now include flight training, which has amassed over 50,000 hours flight time in 18 months; established sales and service agencies for practically every commercial aircraft produced in the U. S., maintenance and repair stations for servicing and overhauling aircraft, engines, propellers, etc., and trained specialists for installation and repair of accessories, radio, and electrical equipment on all types of aircraft.

In the past 18 months two runways originally built by Tony Fokker over 25 years ago, have given way to three 4,500 ft paved strips. Two of these have already been lengthened to 5,000 ft and land now owned by airport will permit extension of all three to 7,000 ft if traffic requires. Land is also available for three additional 7,000 ft runways parallel to existing strips. Runway and obstruction lights were installed and field approved for night flying in 1946. This brought more cargo flights and operators to airport.

▶ **Traffic Control**—Early in 1946 a control tower, utilizing a "light gun," was erected and operated, dawn to dusk, for 9 months. In October of that year, the gun was succeeded by radio control which offered 8 hours service daily. As traffic volume gained, control tower operating hours were increased first to 12 and a few months later to 24 hours per day.

CAA made surveys of traffic flow and finally approved Government operation of the tower. The activation by CAA of the tower in effect was a grant of Federal aid, the first received by the airport, because it removed tower operators from the local payroll. All reconstruction and improvement to date has been made privately by parties interested in growth of airport, with the cooperation of municipal authorities.

▶ **Operations Increasing**—From a few planes in 1945, the field currently houses between 400 and 500 aircraft of all categories (from Cubs to Constellations). Plane movements have risen from three or four a day to between 1,000 and 1,200 per day, and in 1946 totalled more than 151,000. Indications are that this volume will increase steadily during this and the coming year.

In recognition of this phenomenal growth, CAA has authorized installation of an instrument landing system (ILS), work on which is scheduled to begin within two months. Hope has been expressed in some quarters that a GCA system may be installed sometime next year.

▶ **An Express Booms**—Air freight business is expanding almost as fast as facilities that handle it. Approximately 1,200,000 lb freight, moved by 40 independent operators including Willis Air Service, Flying Tiger

TO TRAIN DISABLED VETS

Air Facilities, Teterboro, N. J., fixed base operator, is formulating plans for a flight school primarily for G. I. amputees. Details of the program are being discussed with CAA.

Less than 18 months ago Air Facilities took over the White Flying Service, since then developing into an organization employing 30 people.

Line, Meteor Air Transport, and Flota Aera Mercanta Argentena pass through this terminal weekly.

Driving force of the airport's organization is Fred L. Wehran, president and general manager. Mr. Wehran says that the rate of progress has exceeded his expectations and he now is formulating plans for doubling the capacity of available facilities, if necessary, to keep place with increased demands. Construction of buildings now under way amounts to over $1,000,000; airport improvements in excess of $1,000,000.

▶ **Outlook Bright**—If sales of gasoline are a barometer of volume of business at airport, Teterboro is doing very well. In month of April 1946 900 gal. were pumped. The total has now reached 10,000 gal. per day, with prospects of over 500,000 gal. per mo. in the near future. Oil sales have risen proportionately. These sales break down as follows: light aircraft, 30 percent; transient aircraft, 40 percent, and transport aircraft, 30 percent.

First fixed base operator to come on field, under present management, was Robinson Aviation Corp. in February, 1946, since that time, the number has increased to 36, with many others requesting space.

Other municipalities seeing the need for individual "home town" airports to funnel business to local concerns may profit by the success of this venture in developing their own air terminal projects.

AIA Fund Slash To Cut Activities

Reduced operations in public relations, Personal Aircraft Council, New York and Los Angeles regional office activities of the Aircraft Industries Association were voted recently by the East Coast members of the Board of Governors in New York City. The new budget, reportedly well under $500,000 goes into effect Nov. 1, having previously been approved by the West Coast Governors in Los Angeles.

The board approved the formation of a patents committee to study the effects of legislation on aircraft and associated industry patents. A major subject of the meeting was industrial preparedness and the organization of an industry-wide policy on reserve capacity and personnel and production facilities. A proposed policy was rejected by some members and a revised policy is now in preparation to be submitted at a future date.

New Stock Issue

Stockholders of Resort Airlines, Charlotte, N. C., have authorized the company to issue 50,000 shares of common stock at $2.25 a share and have re-elected all officers. New directors of the uncertificated vacation tour operator are H. C. Silleck, New York, vice president of the Jacob Ruppert Co., and Don Jamison, New York.

MIDSTATES AVIATION OPERATION

Two years ago, John H. Wilson, aggressive NATA executive director, resigned to go back to aviation sales and service. Now he is president of Midstates Aviation Corp., which operates Sky Harbor airport at Northbrook, Ill., Chicago suburb. Top photo shows eye-catching method used to display Cessna 140 in Midstates showroom, raised on wheel wells which permit demonstration of the spring steel gear. Wilson, Cessna distributor in the Chicago area, is displaying the plane to a customer. Lower photo shows exterior of the Midstates buildings.

NYATA Incorporates Without Capital Stock

New York Aviation Trades Association, Inc. of Buffalo, has been chartered by the New York secretary of state as a membership corporation without capital stock, with the following purposes: To unite efforts of those engaged in aviation trades in the state in development and encouragement of public interest in flying, individual participation in aviation, aviation education, aviation research and development, fostering of aviation enterprises; study and assistance in developing aviation laws and regulations, preparing codes, trade practices and standards of operations; develop high standards of employer-employee relationships, conditions of employment and employment benefits.

Directors who will serve until the first annual meeting are: Spencer J. Leech, New York, Anthony Hanzlick, Flushing, Robert Galloway, White Plains; Guy A. Ham, Jr., Glen Falls, V. Richard Ferry, East Greenbush, Henry Scholl, Utica, Thomas W. McNary, Cortland, John J. Drescher, Clarence, Ray Hylan, Henrietta, Kenneth M. Gunnop, Olean, Charles P. O'Connor, Albany; Frederick L. Nugent, Auburn, and Juliet Wells, Elmira.

National Air Clinic Will Discuss Policies

Fifth annual National Aviation Clinic to be held at Springfield, Illinois Nov. 19 to 22 will be pointed towards national aviation policies and results of the clinic discussions will be made available to both the Presidential Air Policy Commission and the Congressional Air Policy Board. The agenda includes the following topics: commercial air transport, personal flying, aviation education, air power, national security and world peace, aviation regulation and legislation, aviation economics and the aviation manufacturing industry, airports and airways, international aviation relations, problems of general public acceptance and good will, aviation research and development.

Attending the four day sessions at Springfield will be top aviation experts from all over the country.

New Air Services Are Organized

Air Travel, Inc., has been chartered by New York state to plan and map air travel tours, secure hotel reservations and disseminate air travel information. The new firm will have offices in New York City initially with plans for expansion throughout the U. S.

► **Myers Flying Service, Inc.** has been granted a charter for operations at Ada, Okla. Capital stock authorized is $20,000 and officers are Escal A. Myers, Mayo and Melba Cottingham.

► **Sisterville Flying Service, Inc.** of Sisterville, W. Va., has been organized with capital stock of $10,000. Owners are William Hubbard, Lee A. Herbold and A. F. Herbold.

► **Gates Aerial Surveys, Inc.,** Suffern, N. Y., has been chartered by New York State with capital of $20,000 in $100 shares to engage in aerial survey work. Everett S. Gates, Leland M. Tibbs and Paul H. Fassnacht are directors of the new enterprise.

► **Carolina Aircraft Sales, Inc.** at Brockenbrough Field, Charlotte, N. C., has started flight training. According to Ed Brockenbrough, president, construction of three new steel arch hangars, 63 x 60 ft., will begin immediately.

► **Grand Central Airport Co.,** Glendale, Cal., has formed a new customer service department combining the former transient service department and the Volador, Inc. shops, previously used exclusively for Ercoupe service. Charles "Chief" Kidder, manager, announces this is the first in a series of moves to return Grand Central airport to its prewar status as center of Southern California personal aviation activities.

► **Aeromarine** of St. Augustine, Fla., has been sold to Paul Calesi, ex-Navy flyer, by Harold Auerbach, founder, who is moving to Washington to take a position with the Civil Aeronautics Administration. Aeromarine operates a flying school, charter service and sales agency for Cessna, Republic Seabee and Taylorcraft.

CAA Supplies Outposts

Skwentna and Farewell, two Alaskan airways outposts situated 70 mi. north of Anchorage and 40 mi. across swampy land from nearest transportation, are now receiving their supplies by airplane. Surface transport methods have proved too slow and uncertain to service these remote stations adequately. Civil Aeronautics Authority now delivers gasoline, oil, and groceries necessary to proper operation of these sites in CAA aircraft. The plan has worked out better than had been hoped and airborne supplies not only reach their destinations on time but also show substantial saving in carrying charges.

McCauley Props On World Flight Cruisers

Study of equipment used in the super cruiser round-the-world flight which is being made by Clifford V. Evans, Jr., and George W. Truman shows that a large number of manufacturers besides the Piper Aircraft Corp. which provided the airframe, have contributed products for the flight including several new items.

First installations of the aluminum McCauley metal prop on Piper Supercruisers, and on the Lycoming 100 hp four-cylinder O-235-C engine, have been made on the round the world cruisers. Increased thrust, and freedom from weather change effects were two reasons for selection of the McCauley props. The engines, provided by Lycoming, are standard supercruiser powerplants except for the propeller installation. Extra tanks holding a gallon of oil, enough for at least 16 hours, have been added, which with the oil normally carried are expected to enable the engines to operate at cruising power for the longest non-stop flights on the trip without danger from oil depletion.

Instruments provided include gyrosyne compass, combining advantages of magnetic and gyro compasses, and the gyro-horizon both furnished by Sperry Corp., sensitive altimeter, airspeed indicator with a heated pitot tube, rate of climb indicator magnetic tachometer, free air thermometer, oil pressure and oil temperature gauges and magnetic direction indicator, all provided by Kollsman Division, Square D Co.

Radio equipment, furnished by Bendix Radio, includes a range and broadcast receiver, direction finding facilities, medium frequency and VHF transmitters. Radio equipment operates directly from the plane's battery, an R-33 rebat battery rated at 33 ampere hrs., provided by Reading Batteries, Inc., and designed to operate all electrical devices continually for two hours in an emergency.

Planes are covered with flightex fabrics and reinforcement tape. Grimes navigation lights, standard supercruiser equipment, are installed in the wings, while the new Grimes B3560 ultra violet fluorescent instrument lights, not generally used on small aircraft, are used to illuminate the instrument panel and provide light for map reading. Delco-Remy 33 ampere belt-driven generators and voltage regulators are supplied, and the aircraft tires are furnished by Goodyear, and the lucite windshields by E. I. du Pont de Nemours & Co., Inc.

Other items supplied include two pairs of calobar sunglasses for each pilot, provided by American Optical Co., Eveready flashlights and batteries from National Carbon Co. unit of Union Carbide and Carbon Co., and AP daymite distress signals from Aerial Products Inc., included in the paraft emergency kits with which each plane is equipped.

BRIEFING FOR DEALERS AND DISTRIBUTORS

BRIGHT SPOT—One of the brightest spots in the recent gray personal aircraft picture was the attendance of an estimated 3,500 private aircraft owners at the recent Cleveland National Air Races. Approximately 3,000 of the planes were tied down at Cleveland Municipal alone during the race days and approximately 500 others were reported at outlying airports, according to estimates collected by Lloyd Wilson of AOPA, and Don Ryan Mockler of Personal Aircraft Council. The Cleveland flying of personal planes is believed to have been probably the largest aggregation of lightplanes ever collected, even exceeding the Miami Air Maneuvers Gulf flights.

DRAWING CARD—Biggest drawing card for the private flyers, and for many other race goers, was the Goodyear Trophy Races for midget lightplanes. The fact that all the Goodyear racers used 85 hp. Continental four cylinder engines, of the type powering many two place stock models now widely used, and that most of the planes, including the winning Wittman entry, were turning Sensenich fixed pitch wooden propellers essentially similar to those on many of today's lightplanes added to the interest as did the spring steel fixed landing gears and standard wheels and tires and many other lightplane items used on various planes. Assuming that Goodyear continues the event next year, the 1948 midget plane races will probably be even more interesting since designers will have a better idea of what speeds and characteristics to shoot at, and a number of planes not completed in time for this year's competition should be ready by next year.

BEHIND THE SCENES—On the last qualifying day before the race start was scheduled, the writer had a glimpse of some of the "blood, sweat and tears" which went into the home-made midget racers down at Alliance, Ohio, at Al Barber's little airport. About half the town of Alliance, including many former and present Taylorcraft workers, turned out to watch, and in many cases, contribute their work to get Barber's racer completed in time to make its first test flight and then hurry to Cleveland the same afternoon for qualifications. When we left about 3 p. m. the promising little plane was still unfinished and it did not qualify. It was damaged in its first test flight a couple of days later, and we haven't learned whether Al plans to rebuild it for next year or not. There were perhaps a half-dozen planes being built which did not qualify for similar reasons, and several of these may be in the race next year.

LIGHTER POWERPLANTS—At least one veteran lightplane designer and manufacturer, thinks that development of lighter aircraft engines for personal planes will be a major factor in improving performance and cutting costs to reach a wider market. C. G. Taylor, back at Alliance as president of the recently formed Taylorcraft, Inc., sees the two-stroke cycle engine as a very interesting new powerplant possibility, believes that using more smaller cylinders, to provide additional cooling fin area would solve cooling problems which have been a principal drawback thus far for the lighter two-stroke cycle jobs.

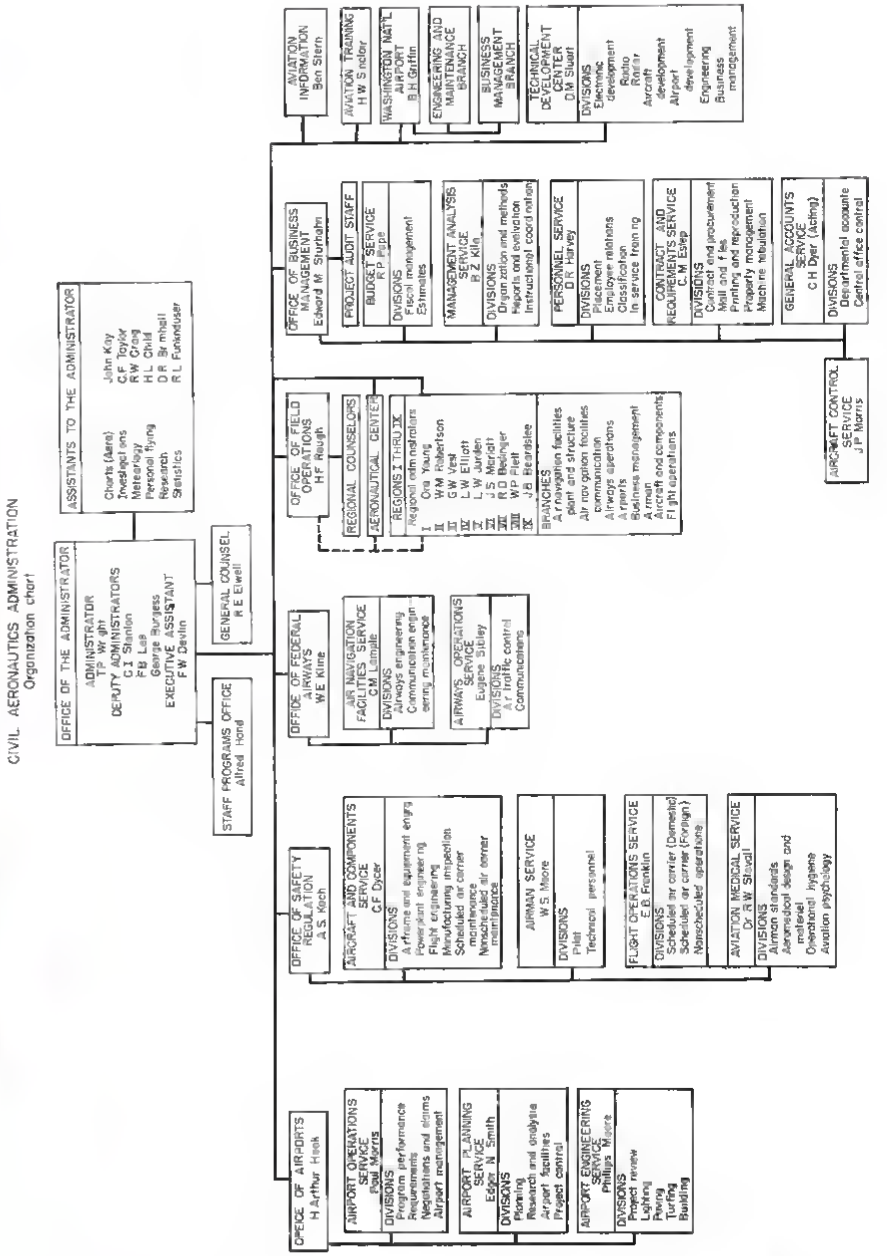
QUIET STINSON—A four-place Stinson Voyager loaned to the Harvard-MIT research group which is working under NACA sponsorship on a personal plane research program, probably will be the first flying test stand, for the Boston organization's quiet airplane experiments. Dr. Otto Koppen, designer of the pre-war two-control Skyfarer plane, is the MIT engineer in charge of the work, which will include testing of various types of multi blade slow turning propellers, with a geared engine, and a muffler system which also includes an ejector cooling device.

CLEVELAND DOWNTOWN AIRSTRIP OPENS—Official opening of Cleveland's downtown Lakefront Airport, now fin enough completed to permit use by private flyers as a convenient landing spot, 10 minutes by taxi from any point in downtown Cleveland, was by a slight coincidence, arranged to take place about the time the National Air Races started. The field, most of which is a filled area, along the lake shore, provides a 2,200 ft. runway east and west, and parking space for 200 planes. The field is open for daylight flights only until additional field equipment is installed. Metal hangars to accommodate 10 planes, a small administration office, fueling facilities and other airport equipment will be provided. Field has a special traffic pattern calling for right-hand turns after takeoffs to the west, and left hand turns after takeoffs to the east, so that pilots flying from the field will not turn in toward the city.

2,000 HOURS A YEAR—Grover Loening, well known aviation engineering consultant, has come to the conclusion that the personal airplane should be used 2,000 hours a year in order to justify its position in our economy by bringing the flight cost per hour down to a sound economic level. This can be approached through two mediums, the flying club, and the company ownership of planes, which are in constant use as executive transports. Loening's analysis, presented before the Royal Aeronautic Society of England, indicates that the individual plane owner needs an income of $12,500 a year in order to devote one quarter of his $9,000 takehome pay after tax deductions to the expense of operating a two place airplane for his own transportation. He estimates yearly expense for a $2,500 two place plane at $2,200 a year, including $500 depreciation, $250 hangar storage, $450 insurance, $1,000 for 200 hrs. flying cost including fuel, maintenance and overhauls.

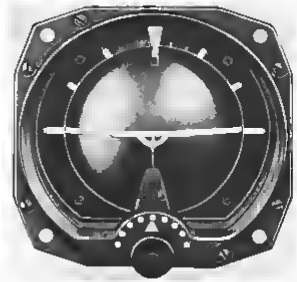
—ALEXANDER McSURELY

CIVIL AERONAUTICS ADMINISTRATION
Organization chart



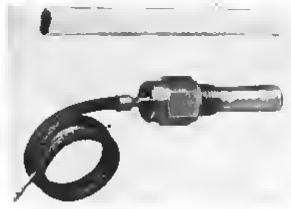
NEW AVIATION PRODUCTS

Simplified tray for service.



Several airlines using this new gyro horizon including UAL, Sabena, KLM and Swedish Airlines.

Self-sealing fuel tank.



Smallest thermostat produced.

Makes Airline Meal Service Easier

Simplification and speed-up of meal service and tray removals in flight is aim of new tray carrier for use by airline hostesses. Developed by Frank Davis, devices designer, it will be manufactured by **Air Associates, Inc.**, Teterboro, N. J. Light in weight, carrier is collapsible for easy stowage when not in use, and it is built in proper width to be rolled up and down aisle of plane with minimum clearance so seats on either side prevent any tipping. Designer Davis got idea for carrier when, on flight from Miami, he noted hostesses had difficulty negotiating aisles with trays when plane encountered bumpy air. Tray is being tested by American Airlines.

Lighter, Quicker-Sealing Fuel Tanks

Self-sealing fuel tanks that save 40% in weight over old type—amounting to reduction of as much as 1,000 lb. in heavy bombers—are announced by **United States Rubber Co.**, 5675 Anaheim-Telegraph Rd., Los Angeles 22. Moreover, new units are stated to be three times as fast in sealing bullet holes, employing special substance which expands when gasoline seeps into it after puncture by projectile, thus closing wound. Improved tank is reported to accommodate kerosene fuel used for jet engines as efficiently as gasoline. In photo, technician demonstrates lightness of new self-sealing tank material in contrast to old type.

Gyro-Horizon for New Craft

Latest gyro-horizon manufactured by **Sperry Gyroscope Co.**, Great Neck, Long Island, N. Y., is this Model H-3. Instrument is electric driven, and being non-tumbling and requiring no caging, it provides unlimited indications in bank. Horizon bar shows climbs or glides to plus or minus 27 deg.

Midget Aero Thermostat

Flug Stat, thermal control and limit switch under development since late 1946 by **Control Products, Inc.**, 306 Sussex St., Harrison, N. J., is designed to warn of excess temperatures in aircraft gear boxes, bearings, and the like, giving high or low indications in fluids under pressure, or static fluids such as oil, and also gaging liquid temperatures in cylinder heads or exhaust stacks. It is installed by merely drilling and tapping N.P.T. or N.F. threads. Electrical characteristics: Operates on a.c. or d.c. 28v. 2 amp., one side normally grounded to case, can be had in normally open or closed circuit. Physical characteristics: Case made of cold rolled steel, brass, or stainless steel, according to application, hermetically sealed against pressure, moisture, and dirt, built to withstand severe vibration and abuse, weight 67 oz. Photo shows how unit compares in size with cigaret, company calling this thermal limit switch the smallest currently produced.

Information Tips

Material-Test Computer

Slide-rule type computer for speeding calculations in material planning and testing work has been developed by **W. C. Dillon & Co.**, 9410 W. Harrison St., Chicago 44. As example of rule's use, operator need only set scale for specimen size, then read breaking strength opposite psi—instead of using long method of figuring specimen cross-sectional area and multiplying this area times the psi. Knowing any two factors device gives third factor, thus psi, or how big to make a specimen or what load is needed are readily ascertained. One side of rule covers rectangular specimens from 1/32 in. to ¾ in. thick by ½ in. to 1¾ in. wide, from 0 to 100,000 lb psi; while other side covers round specimens 1/16 in. to 2 in. dia., up to 100,000 lb psi. Company is mailing computer free to accredited engineers and designers who write in giving full name, company and title.

Large Screen Oscillograms

Projecting of oscillograms into large-screen images up to 12 by 12 ft. size for lecture and demonstration purposes is now possible employing Type 2060 lens developed by **Allen B. DuMont Laboratories**, 2 Main Ave., Passaic, N. J. Information on this accessory may be obtained from company, which states lens is intended for use with oscillographs employing Type 5UP-A high-voltage cathode ray tube.

Rescue Procedures Detailed

Step-by-step procedures in aircraft rescue and fire fighting are given in 16-page booklet of suggested standards issued by **National Fire Protection Assn.**, 60 Batterymarch St., Boston 10, Mass. On basic premises of rescue of persons and of fire fighting to expedite such rescue, the varying conditions are broken down—on airdrome, on land; off airdrome, on land; and on or off airdrome, on water. Specific situations treated are: Anticipated crash landings; potential crashes during takeoff; unexpected crashes at the field; crashes at reasonably accessible distances; and those occurring beyond such radius. Charges of 25c. is made for single copies of booklet.

Neon-Glow Indicators

Information on "Indigle" neon-glow indicators, suitable for location on-off and pilot-light use on aircraft instrument panels is available from maker, **Littlefuse, Inc.**, 4757 Ravenswood Ave., Chicago 40. Two models, "Finch-Lite" and "Post-Lite" are offered in clear and white molded polystyrene shells or, on special order, in clear, red or amber high-temperature Lucite.

Toward New Simplicity in Measurements

"Simplification of basic terminology used in defining operating principles of measurement systems that use electrical means" is purpose of Bulletin GET-1344 issued by **General Electric Co.** schenectady, N. Y. Titled "Analysis of Measurements" and prepared by I. F. Kinnard and H. C. Dickinson, the 28-page pamphlet describes uses of functional analysis in solving applications to research and development problems, to compilation of statistics, and to coordination of activities. Sought are patterns resulting in more complete lists under primary detectors, intermediate means, end devices, and basic elements. There are 18 diagrams, together with a full-page chart depicting frequency of basic elements relative to different types of quantities measured.

Valve and Pump Catalog

Engine valves, valve seat inserts, rotor pumps, coil springs and other items for aviation market are covered in new pocket-size 1047 edition "Products of Eaton" catalog issued by **Eaton Mfg. Co.**, 730 E. 140th St., Cleveland 10, Ohio.

Re Industrial Design Services

"How to Use an Industrial Designer" is title of pamphlet from **Society of Industrial Designers**, 48 E. 40th St., New York City 17. Ten specific questions of businessmen regarding these functions are answered, thus the aviation executive may gain perspective of values afforded through retaining such services.

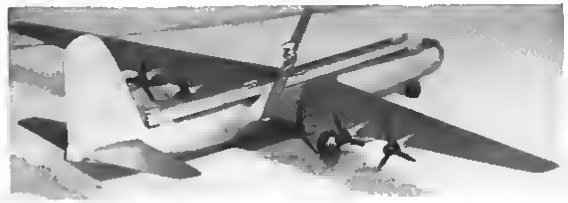
Reconditioning of Carbide Tools

"Grinding Carbide Tools" is 140-page spiral-bound handbook issued by **Norton Co.**, Worcester 6, Mass. Divided into nine comprehensive sections, this well-illustrated publication gives full information on rapid and economical reconditioning and sharpening of cemented carbide tools and cutters.

FROM TRANSPORT PLANE TO AUTOGIRO

Antoine Gazda, Providence, R. I., inventor and helicopter developer, has patented a device for in-flight conversion of a transport plane to an autogiro to obtain slow landing characteristics in case of power failure. Although planning to install his device experimentally in a DC-3, Gazda has used a model of Consolidated Vultee's giant B-36 bomber for demonstration purposes. The two-blade rotor is concealed in the top of the fuselage by a door running full length. When the door is opened, the rotor projects up and autorotates to provide lift. A rotor for a plane as large as the B-36 would measure 120 ft. and add 3,400 lb. weight to the plane. An installation in an actual plane would provide for doors sliding sideways into the fuselage. The rotor would have to be mounted over the center of gravity of the plane.

Gazda



Great Lakes Area Granted Helicopter, Feeder Services

CAB member Harllee Branch takes dim view of results in short-haul experiment to date and will oppose certification of more mileage.

By CHARLES ADAMS

An experimental intra-city helicopter service which will carry passengers and property but no mail has been authorized for the first time in a CAB decision which also provided for cautious extension of the feeder network into Illinois, Indiana, Michigan and Ohio.

Highlighting the Board's action in the Great Lakes Area case was a dissenting opinion by member Harllee Branch, who opposed the majority's approval of new feeder routes for Parks Air Transport, East St. Louis, Ill., and Roscoe Turner Aeronautical Corp., Indianapolis, Ind. Branch expressed disappointment with feeder progress to date and said he did not intend to sanction any new experimental short-haul routes until the results of three years' experience with presently-certificated systems can be evaluated.

▶**Eighth Case**—The Great Lakes case was the eighth area proceeding decided by CAB and enlarged the approved local service network to more than 20,000 miles to be operated by 16 carriers. Opinions are still to be handed down in the Mississippi Valley, Middle Atlantic and Arizona-New Mexico cases.

In granting Yellow Cab Co. a three year permit to operate helicopters in the Cleveland, O., area, CAB said the experiment would definitely promote the public interest without tapping the public treasury through mail pay. The two routes authorized are between Cleveland Municipal Airport and a terminal point in downtown Cleveland, and between the airport and the suburb of Euclid, O., via Shaker Square.

▶**Time Savings**—The cab company has set aside $250,000 for the helicopter project and plans to use four-place Sikorsky S-51s to start service. Savings in time via helicopter over existing limousine-taxicab service would be 9 minutes, or 63 percent, from downtown Cleveland to the airport, 40 minutes, or 73 percent, from Shaker Square, and 50 minutes, or 63 percent, from Euclid.

Both of the feeder operations authorized for the Great Lakes area will be certificated upon a showing of adequate airport facilities along the routes designated. The requirement of adequate airports as a qualification for three-year short-haul certificates was placed in two previous area decisions.

▶**New Links for Parks**—Parks was selected to operate links between Rockford, Ill., and the co-terminals St. Louis, Mo., and East St. Louis, Ill., via La Salle-Ottawa, Ill., Peoria, and Springfield, between Galesburg, Ill., and Indianapolis, Ind., via Peoria, Bloomington, Champaign-Urbana and Danville, Ill., and Crawfordsville, Ind.; and between Indianapolis and the co-terminals St. Louis and East St. Louis via Crawfordsville, Danville, Champaign-Urbana, Decatur and Springfield.

Routes granted Roscoe Turner Aeronautical Corp. are two north-south links between Grand Rapids, Mich., and Cincinnati via Kalamazoo, Mich., South Bend, Logansport, Kokomo, Indianapolis and Connersville, Ind., and between Chicago and Louisville, Ky., via Kankakee, Ill., Lafayette, Indianapolis, Bloomington and Bedford, Ind.

▶**TWA Extended**—No feederline was selected to provide extensive service within Ohio, but the certificates of TWA were amended to give that state additional local-type operations. The carrier's Indianapolis-Dayton segment of AM-2 was extended from Dayton to Cleveland with authority granted to serve Springfield, Marion and Mansfield, O., as intermediate points and permission to operate nonstop service between Indianapolis and Cleveland.

Rate Wars Again Hit Alaskan Route

Uncertificated lines also troubled by tightened Government regulations.

Recent rate wars, coming on top of stricter enforcement of Government regulations have pushed a sizeable number of uncertificated Alaskan air carriers onto the ropes and indications are that some of the companies will be unable to make a comeback

Two principal trouble spots stand out. One is the highly competitive route between Northwestern U S and Alaska over which between 10 and 15 uncertificated carriers are operating on a supposedly irregular basis under the nonscheduled exemption (section 292 1 of CAB's economic regulations). The other difficulty involves between 30 and 40 uncertificated lines operating with uncertain legal status over routes entirely within Alaska

▶ **Fight To The Finish**—Some of the irregular operators flying the Alaska-Seattle route trace the most recent rate war to scheduled intra-Alaska air carriers one of which has been quoted as saying it would put the "bucket liners" out of business "even if it takes half a million dollars" Jack Scavenius, president of noncertificated Mt McKinley Airways, has charged that several airlines which have CAB authorization to operate on schedule within Alaska are engaging in numerous nonscheduled flights to the U S, often at a heavy loss, in order to beat down competition

A maritime strike last fall brought new nonscheduled carriers to the Seattle-Alaska route with a rush, and many of the operators continued in business after the tie-up ended and business returned to normal Big problem for the outfits flying cargo and passengers to Alaska is to get a payload on the backhaul With only a little South-bound freight available, a passenger rate war has developed

▶ **Fares Tumble**—A year ago, Mt McKinley Airways' one way fare by C-47 from Anchorage to Seattle was $126 50 By early this spring, the price charged by a number of nonscheduled lines had skidded to $80 Then a non-operating company, which the irregular carriers believed was cooperating closely with a large certificated intra-Alaska line, advertised a rate of $59 50, tax included Seven irregular carriers replied by dropping their one-way fare to $57.50, but losses forced them back up to $70.

Certificated intra-Alaska carriers believe the nonscheduled lines operating exclusively on the Alaska-U S. route are flying with a frequency that places them in violation of CAB regulations Curiously, Pan American Airways and Northwest Airlines, the only two carriers certificated to operate between the U S and Alaska on schedule, apparently are on the sidelines in the current uproar

▶ **Difficulties Inside Alaska**—Meanwhile, a large number of operations started since the war and conducted entirely within Alaska are watching storm signals Although claiming to be charter or contract carriers, these companies have often been accused of offering common carrier service

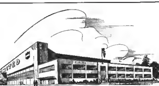
Section 292 1 of CAB's Economic Regulations, which permits nonscheduled lines to operate as common carriers within the U S or between the U S and Alaska, does not apply to intra-Alaska services Instead, all common carriers, scheduled or nonscheduled, operating within the territory must have either a certificate of public convenience and necessity or come under a general temporary exemption issued in July, 1945, or specific exemptions issued in 1946

▶ **Safety Regulation**—No carrier which started operations after Dec, 1945, has been given an exemption, and many of these newcomers are now in trouble. Last summer, CAB promulgated part 42 of the Civil Air Regulations requiring all nonscheduled companies to obtain an air carrier operating certificate from CAA showing compliance with certain safety standards In an effort to prevent hardship, CAA did not enforce part 42 as strictly as possible for almost a year.

Now CAA has denied air carrier operating certificates to 18 Alaskan companies which are flying without either certificates of public convenience and necessity or exemptions issued by CAB In the future, these lines either will have to confine themselves exclusively to charter and contract work, get proper CAB authority for common carrier service, or go out of business entirely

▶ **Test Case**—Certificated lines within Alaska have long felt that CAB has not been sufficiently diligent in protecting their interests against the encroachment of uncertificated operators One such certificated company, Alaska Coastal Airlines, recently won a court order prohibiting an uncertificated operator, Alaska Airplane Charter Co, from offering the public a common carrier service without proper authority from CAB The case was the first of its kind in Alaska, and the precedent set by the court may have far-reaching effects.

CAB has under active consideration the issuance of a new exemption for irregular passenger and freight operations within Alaska The proposal was made last fall (AVIATION NEWS, Nov 18) by Raymond W Stough, director of CAB's Alaska office, who was in Washington early this month to confer with the Board



NEW UAL HANGAR PLANNED

Architect's sketch of proposed station and hangar facilities for United Air Lines at the Seattle-Tacoma airport near Seattle, Wash., shows the large steel frame hangar which occupies 31,000 sq. ft. Facilities will be provided to accommodate upwards of 500 operation and passenger service department employees and include maintenance shops, flight kitchen, stock rooms and air freight terminal.

Labor Pact With IAM Signed by Flying Tigers

International Association of Machinists has signed an agreement with the Flying Tiger Line covering 550 employes of the Oakland, Cal, based carrier

The pact provides for six paid holidays annually, 15-cents-an hour average wage increases, two weeks' paid vacation and night shift bonuses Among the new pay rates are lead inspector, $400 a month, inspector, $350 a month, mechanic, $1.75 an hour; and ground service-men, $1 25 an hour,

CAB SCHEDULE

Sept. 15 Hearing in Chicago Helicopter service case. (Docket 2354 et al.)
Sept. 15 Hearing on Southwest Airways' request for certificate amendment to permit beginning and/or ending trips at points short of terminals. (Docket 2781)
Sept 25 Oral argument in Northeast Airlines mail rate case (Dockets 1832 and 1855)
Oct 7. Hearing involving additional Florida area service. (Docket 1160 et al)
Oct 15 Hearing on additional service in California-Nevada Area. (Docket 2618 et al)
Oct. 20 Hearing on Resort Airlines application to conduct all expense "sky cruise" operations Postponed from Oct. 8 (Docket 2377 et al)
Oct. 20. Hearing on Pan American Airways' application for route consolidations and extensions in Latin America. (Docket 2811)
Nov 18 Hearing on board's investigation of consolidated airfreight tariff agreement. (Docket 2718)

Protection Sought In Crash Landings

The entire problem of protecting passengers and crew members in crash landings is being reviewed thoroughly by CAB's Safety Rules division, which has decided to go far beyond a recent proposal to increase the strength of safety belts in transport planes

In addition to higher standards for safety belts, the Safety Rules division is studying the advisability of more stringent requirements for the seats themselves and the structure to which they are attached so that they will be able to withstand more load under emergency conditions Provision for shoulder harnesses for pilots and co-pilots and use of rear-facing passenger seats are being considered in accordance with last month's suggestions by the President's special board of inquiry on air safety

▶ **Passenger Reaction**—Aft-facing seats have been regarded unfavorably by the airlines in the past because of the psychological effect on the average passenger But it has been recognized that this arrangement provides the greatest degree of safety in the event of emergency landing Moreover, surveys made by the Army Air Transport Command over a seven month period have disclosed 94 per cent of those using the aft facing arrangement favored it for its safety factor.

Medical findings over a long period have indicated the desirability of providing full body support for persons experiencing the accelerations resulting from crash landings It has been demonstrated that in plane accidents involving craft with conventional forward-facing seats the body normally is jackknifed so that the head may be subjected to violent injury at the moment of impact

▶ **Accident Study**—Need for strengthening seats and the structure to which they are attached has been pointed up in several accidents during the past year Testimony on the United Air Lines crash at LaGuardia Field last spring disclosed that every seat but the stewardess' was torn from the floor, and the passengers had been violently thrown against the legs of other overturned seats

In the American Airlines accident at Michigan City, Ind, last December, there were both seat attachment and belt failures All belt failures occurred in the attaching hardware While no passengers were killed in this accident, both the pilot and co-pilot were fatally injured when they were thrown into the forward wreckage as a result of failure by their seat attachments

Pilot and co-pilot were found still in their seats with belts fastened and intact, but the men had suffered severe head injuries and lacerations, apparently from striking the instrument panel and the overhead structure and windshields The nonfatal American Airlines emergency landing at Jones Beach, Long Island N Y, last January also resulted in passenger injuries through belt and seat failures, while the co pilot was injured when thrown into the instrument panel

WOLFE AND BONANZA

Thomas Wolfe, vice president in charge of the Pacific Alaska division of Pan American World Airways, is shown with his newly-purchased Beech Bonanza. The plane will be used for executive travel on the Pacific Coast

New Slash Planned In Airfreight Rates

Three lines, American, United, PCA, file tariffs which bring rates below present mark

With the price of almost every other transportation service bounding upward, three certificated carriers—American United and Capital (PCA)—have filed new airfreight tariffs which would bring their rates on a wide variety of commodities down to 12 cents a ton mile on Oct 5

The move is a direct challenge to the uncertificated all-cargo lines which are now charging between 12 and 12½ cents a ton mile for their newly-authorized common carrier services There is every indication that both the uncertificated airfreighters and the airfreight forwarders who are being shunned by the certificated lines, will contest the proposed new tariff with CAB and carry their case to Congress if necessary

▶ **Commodities Listed**—Nineteen certificated airlines, including American. United and PCA slashed their cargo rates 25 percent on Aug 1 so that charges currently range between 14 and 21 cents a ton mile Commodities listed for the new 12 cents a ton mile rate include agricultural products, flowers, aircraft and automobile parts or accessories, wearing apparel, dry goods, electrical appliances and parts film, machine parts, drugs and pharmaceuticals

Illustrative of the radical reduction now in prospect is United's proposal to move 3,000 lb from coast to coast for $477 instead of $750 under the current tariff. A 100 lb shipment from New York to Chicago would cost $5 against the present $8 On shipments below 1,000 lb., United American and PCA would undercut the major uncertificated all cargo lines and probably will be able to divert considerable traffic from railway express

▶ **Uncertificated Lines Protest**—The uncertificated all cargo lines believe the certificated carriers should not be permitted to file lower freight rates in view of their charges for hauling passengers and mail They point out that PCA has been getting several dollars per ton mile for flying mail and the equivalent of 50 cents a ton mile for passengers

How, they inquire, when PCA is losing money charging these rates for mail and passengers can it ask only 12 cents a ton mile for freight? Both American and United get 45 cents a ton mile for mail and the equivalent of 50 cents a ton mile for passengers

The uncertificated carriers allege that the certificated lines are using their airmail payments to subsidize freight operations and put the independents out of business

Training Program Set

Engineers and technicians from six airlines will study electronic controls used on the Boeing Stratocruiser and Martin 3-0-3 at a school to be conducted by the Minneapolis-Honeywell Regulator Co beginning Sept 29 Attending the training program, which will include familiarization, maintenance and repair studies of electronic fuel gauges and turbosupercharger control systems, will be representatives from Northwest Airlines, BOAC, Scandinavian Airlines System, United Air Lines, Pan American Airways and American Overseas Airlines.

Florida Expansion

Florida Airways, which operates the nation's smallest certificated feeder system, contemplates the purchase of six 20 passenger Beech model 34 aircraft if successful in its application for service to 16 additional Florida cities

New Local Service Proposals Snagged

Two feederlines among the five designated for certification by CAB contingent on a showing of adequate airports along their routes have found the Board reluctant to give the green light for inauguration of service.

Wisconsin Central Airlines, designated for certification in CAB's North Central Area decision last December, applied for its certificate on June 27, and was still waiting early last week. Piedmont Aviation, designated for certification in the Southeastern States Area case decision in April, filed for its certificate a month ago and has been taking punishment ever since.

▶ **Expense Incurred**—Both carriers have reported incurring considerable pre-inauguration expense, including the acquisition of planes, in anticipation of prompt CAB action on then petitions. While Wisconsin Central is still hopeful of getting a go-ahead signal shortly, Civil Aeronautics Board has officially postponed action on Piedmont's bid.

The Board said petitions for reconsideration of the decision authorizing a certificate for Piedmont are still to be acted upon. It also pointed out that State Airlines has filed with the District of Columbia Court of Appeals a request for review of the Southeastern Area Decision insofar as it granted Piedmont routes requested by State.

▶ **Eastern Protests**—State Airlines has told CAB that Piedmont went ahead with its plans for acquiring equipment after the court action was instituted and regardless of its knowledge that the Board is still considering petitions for review of the Southeastern Area decision. Meanwhile, Eastern Air Lines jumped on Piedmont with an assertion that the company actually was planning to start a conventional trunkline operation between the most important cities on its designated routes.

EAL said Piedmont's initial service would bring air service to only four cities for the first time, adding that these points had an aggregate population of only 45,970. "If Piedmont were to operate two roundtrips daily and receive 45 cents a plane mile mail compensation, the public would pay about $1,116,900 annually to subsidize a wasteful, extravagant and unneeded experiment," Eastern asserted.

ATA Hits REA

The Air Transport Association is strongly opposing Railway Express Agency's request for CAB authorization to ship cargo over uncertificated airfreight lines.

ATA, in a brief to the Board, warned against expanding REA's participation in air transportation "at a time when the wisdom of continuing its present degree of participation is in question. The class of traffic in which there is great airfreight potential is that which now moves as railway express. The railroad owners of REA would not encourage or permit REA to work vigorously to accomplish this diversion from the rails."

For years, ATA asserted, the airlines have prodded REA to improve and increase service with small success. "Instead, REA has frustrated joint promotional committees and campaigns which the airlines established."

PCA Shows Loss

Capital Airlines (PCA) had an operating profit of $19,549 and a net loss of $196,657 during the second quarter of 1947, compared with a $2,331,960 net loss in the first quarter, according to revised figures. Operating expenses in the second quarter were $111,000 less than in the first quarter despite an increase in traffic. Passenger business during the latter part of August and early September showed marked improvement over figures reflecting early-summer levels.

SHORTLINES

▶ **American**—Established a new all time passenger traffic record in the New York area during August. Company flew 70,021 persons out of LaGuardia field and Newark airport to beat the previous record of 67,239 passengers set in Aug., 1946. August load factors out of New York were 8 percent above July.

▶ **American Overseas**—Made its 15,000th trans-Atlantic crossing early this month. The trips, covering a five-year period, include the regularly scheduled AOA passenger flights plus military and naval contract operations conducted during the war. On commercial flights alone, AOA has carried 90,195 passengers and nearly 5,000,000 lb. of cargo and mail. Company is operating 24 round trips weekly to Europe with seven Constellations and eleven DC-4s.

▶ **Braniff**—Has signed a contract with Maxson Frozen Food Corp. for "Skyplate" in flight meals when the carrier opens its Latin American service this fall.

▶ **Capital**—Will fly seven college football teams and two professional elevens to games in all parts of the country this fall.

▶ **Continental**—Is pointing out to its passengers flying between Albuquerque and El Paso that Alamogordo Desert area where the first atomic bomb was detonated.

▶ **KLM**—After 27 years of operations to Croydon airport has transferred its London services to London (Heathrow) airport.

▶ **Mid-Continent**—Has begun a system wide drive for first-rider business.

▶ **National**—Recently launched a system wide reorganization and enlargement of its security and fire prevention division. James H. Hart has been appointed security and fire prevention engineer.

▶ **Northwest**—On Sept. 1 marked the first anniversary of its service to Anchorage—first steps in developing its international operations. During the year NWA flew 14,661 revenue passengers on Alaska flights, 434,929 lb. of mail, 120,342 lb. of express and 214,515 lb. of freight.

▶ **Pan American**—During the week ended Aug. 23 established a new record for trans-Pacific air travel by carrying more than 1,500 revenue passengers to and from Honolulu.

Peruvian International—Since beginning operations last spring has signed interline agreements with American Airlines, American Overseas, Pan American, KLM, Chicago & Southern, National, Delta, Trans-Canada, Scandinavian Airlines System, Air France, TACA and Eastern. Company hopes to begin flights to the U. S. shortly.

▶ **TWA**—Is moving several international division offices and departments from 521 Fifth Ave., New York, to New Castle County airport, Wilmington, Del. Company has inaugurated direct nonstop service from Washington to Cincinnati.

Nonscheduled Lines Facing New Ban

Nonscheduled passenger transportation to foreign points was slated to take the ax from CAB last week as a number of uncertificated carriers frantically sought a stay of execution

When the Board revised the nonscheduled exemption (section 292 1 of the Economic Regulations) last June 10, it authorized indefinite continuance of nonscheduled domestic and overseas transportation, the latter including flights to Hawaii, Alaska and Puerto Rico But CAB said substantial extension of this country's certificated international air transportation system, together with the award of numerous foreign air carrier permits, had made it advisable to terminate on Sept 10 the exemption for irregular passenger-carrying flights to foreign points

▶ **Extension Sought**—A number of petitions for a three to six month extension of the Sept 10 deadline were received by CAB early this month, and more were expected The requests came not only from carriers using large equipment for flights to Europe, Asia and South America but also from small fixed base operators which have been taking U S sportsmen to Canadian fishing and hunting areas

▶ **Backhaul Problem**—Airfreight is now available in considerable quantities for the run from the U S to foreign points, but because of general scarcities of commodities abroad there is little chance of picking up a profitable load of cargo on the backhaul Carriage of passengers to make the overall operation financially successful is still necessary, TAL declared, adding that without this privilege a number of U S irregular carriers presently engaged in foreign transportation of both passengers and cargo face extinction

Transocean has been operating from its Oakland, Cal , base to the Philippines and the Far East and between New York, Europe and the Middle East Other companies asking CAB to extend its exemption are Trans Caribbean Air Cargo Lines, New York, flying from New York to Europe and the Near East with five DC-4s; Skyways International Trading and Transport Co , Miami, operating to Latin America Europe and the Middle East with two Lodestars, two DC-3s one C 46 and one Sikorsky S-44

Other industry developments

Slick Airways, San Antonio flew 25-525,408 revenue ton miles of freight between March, 1946 and July 31 1947 when it closed its books as a contract operator and became a common carrier July total was 1 547 998 ton miles.

Bonanza Airlines, Las Vegas Nev and Arizona Airways, Phoenix Ariz, have called off plans for merger of the two intrastate systems (AVIATION NEWS June 23)

Winged America Airlines Philadelphia Pa. has asked CAB for a certificate to operate from New York and Philadelphia to Nassau, Bahama Islands. Company operates four DC 3s

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B-405 120 x 200—Three buildings 120' wide by 200' long by 12' high to the eaves. Composed of three bays measuring 40' wide each. Center height in proportion. Six sliding doors measuring 10' x 10' and located one at each end of each bay are included. Eight windows measuring 3' x 5' are also included.

B-409 100 x 100—One complete building 100' wide by 100' long by 12'6" composed of two bays measuring 50' wide each. Center height of each bay is in proportion with the eave height. Four sliding doors and ten windows are included in the building. Entire structure is covered with corrugated aluminum sheeting.

B-407, 150 x 300—One complete building 150' wide by 300' long by 20' high at the eaves. Composed of 3 bays measuring 50' wide each. Center height of each bay is in proportion with the eave height. Six sliding doors and 12 windows are included. Corrugated aluminum roofing and siding included.

B-408, 120 x 100—One complete building 120' wide by 100' long. Side wall height 14' to the eaves. Composed of two bays measuring 60' wide each. Four sliding doors measuring 20' x 20' each are included and four each measuring approximately 3' x 5' are included. Entire building is covered with corrugated aluminum.

B-409 140 x 160—One complete building 140' wide by 160' long by 20' high to the eaves. Composed of two bays measuring 70' wide each. Building is equipped with four 20' x 20' sliding doors, six steel sash measuring 3' x 3' are included. Aluminum roofing and siding is included.

B-410, 110 x 150—One complete building 110' wide by 150' long—clear span, 16' high at the eaves. Truss type support. Covering and siding included. Doors included.

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6 ton Detroit. 74' Span. Three motors—1½ HP, 5 HP and 1½ HP. Current 600 Volts AC.
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5 ton overhead crane. 37'3" Span. Hoist motor 10 HP, trolley 2 HP; Bridge 7½ HP. Current 440 Volts, 3 phase, 60 cycle.
5 ton Alliance. Span 9.. 230 Volts DC. Hoist motor 60 HP, Bridge 50 HP, trolley 15 HP.
10 ton Lane. Span 60'. Two 15 HP motors, one motor operates bridge and hoist, the other the trolley. Current 230 Volts DC.
15 ton Bedford. Span 24'6". 220 Volts AC.
15 ton overhead crane. 74'4" Span. 3 motors General Electric—50 HP on hoist.
20 ton overhead crane. 60' Span. Four General Electric DC motors.
25 ton overhead crane. 74'4" Span. Four General Electric motors—40 HP on hoist; 15 HP on auxiliary hoist; 15 HP bridge and 5 HP Trolley.

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ADVERTISERS IN THIS ISSUE

AVIATION WEEK

Sept. 15, 1947

SEARCHLIGHT SECTION

(Classified Advertising)

EDITORIAL

A Demonstration of Integrity

Nothing is so difficult in commercial aviation as to concede publicly either that we have made mistakes, or that results have been below expectation.

The dependence of human life on our manufacturing industry's products has instilled in some of us the keenest reluctance to tell the public the truth when problems are most difficult.

In this industry we have a grapevine telegraph so speedy that rumors are born and flourish to nation-wide proportion overnight.

So we feel a glow of pride when one of our leading aircraft companies announces openly to its customers and the aviation press that it has found some of its products are below its own standards, and is setting out to do something about it before the rumor mill can start grinding out exaggerations.

Every aviation editor last week must have been as surprised as we were to receive a letter from John P. Gaty, vice president and general manager of Beech Aircraft Corp., telling why his company had decided to replace the wings on about 250 of the 800 Beech Bonanzas built to date. The wings of these 250 planes have the skin roll welded to the stringers.

Mr. Gaty also enclosed a copy of the letter he is sending to each owner of a Bonanza, with a similar explanation.

No high-falutin' phraseology, no backtracking, no "victim of circumstances" attitude, no self-praise outlining the cost to the company in making these changes. We think the Beech explanation is worthy of reproducing here, as Mr. Gaty tells it to the aviation press. He says:

"When the Bonanza was first designed, one of our basic requirements was that the airplane should be able to give approximately 2,000,000 miles of safe operation without unusual maintenance expense. All-metal airplanes have long demonstrated the fact that their potential useful life is better than that of almost any other vehicle, measured in miles.

"In order to insure that the Bonanza fulfills these requirements, a very extensive fatigue testing program was carried through to completion prior to putting the Bonanza in production. No other airplane, either military or commercial, ever received such a thorough test as the Bonanza before quantity production. These tests extended over a year and indicated that the Bonanza would give at least 2,000,000 miles of safe and trouble-free operation except for the usual maintenance.

"During one of the most critical phases of our production acceleration we found ourselves short of automatic riveting capacity. In order to maintain production at the planned level, we made some experimental roll-welded skins and installed them on test wings. These tests indicated that the roll-welded skins were equally as good as the riveted skins. However, there was not time sufficient to accumulate a year of testing or a thousand hours in the air on any such unit. For that reason, the roll welded skins did not receive the thorough testing that was imposed upon the riveted skins.

"Periodic inspections of some of the airplanes with the roll welded skins have shown a minor and relatively unimportant crack in the vicinity of some of the weld spots. Although these cracks are of no structural significance at this time, they do indicate that the roll-welded skins will not stand up over the desired life of the airplane, on a par with the riveted skins. For that reason they are being replaced. We are making the change merely because each customer is entitled to the best possible airplane that we can deliver him for the price paid.

"Roll or spot welding will continue to be used on parts which are not subjected to the constant flexing that is imposed on wing structures by bumpy air. This method of fabricating structures is economical and efficient and helps to keep down the cost of metal airplanes.

"In order to stop any disturbing rumors—and as a matter of information—we also are sending letters explaining our action to all owners of Bonanzas having riveted wing skins.

"We know that you can handle this incident in a manner that will be beneficial to the entire aircraft industry. All modern U. S. airplanes are good products and are backed by an active regard for the customer's interests by the manufacturers of U. S. products."

If we were the owner of one of those 250 Bonanzas, we could hardly have any feeling but gratitude for the manufacturer, even though getting the ship back to the factory would be at our expense. We think Mr. Gaty's forthright handling of this problem is also a lesson for the rest of the aircraft industry.

ROBERT H. WOOD

NOW... a fleet of flying labs

Several of these airplanes, shown in front of the G-E Flight-test Laboratory, are outfitted as flying laboratories. As such, they help test equipment ranging from jet engines and aircraft power systems to flight recorders and other specialized instruments. "Bugs"—inevitable in any new design—are caught and corrected in shorter time and at less expense than by other methods of testing. Results are reflected in better products at less cost to the user.

In 1942, several years before the G-E Flight-test Laboratory was built, General Electric started testing aircraft equipment with a B-23 rigged for turbosupercharger research. Since then we have operated, in co-operation with the Army Air Forces, about a dozen different flying laboratories—B-24's, B-29's, helicopters, and others.

When you specify G-E equipment, you know that you are getting equipment thoroughly tested. Our efforts here save you time, expense, and lives elsewhere. G-E specialists throughout the country will be glad to discuss our equipment with you—perhaps we can help you solve your electrical problems. *Aviation Divisions, Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

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